

1 **Supplementary Information**

2 **Table S1.** Salinity, dissolved trace metals and P concentrations in water, total and
3 intracellular metals, P and chlorophyll composition of *Trichodesmium* colonies, in
4 samples collected in the West Tropical North Atlantic Ocean (April-May 2003).
5 Elements composition normalized to phosphorous are given in mol:mol except for Chl
6 *a*, which is given in $\mu\text{g Chl}a$ per nmol P. Phosphorous in *Trichodesmium* are in nmol
7 per colonies. Upper and the lower italic number are the total and intracellular
8 composition of *Trichodesmium*, respectively. Bold station numbers are a set of samples
9 collected during 24 hours along the Amazon plume. n.m.: not measured; n.d.: not
10 detected.

11

12 **Figure S1.** Profiles of salinity (triangles) and dissolved metals and P (black dots) in the
13 West Tropical Atlantic Ocean. Panels include a regression curves of dissolved elements
14 plotted again salinity for six stations sampled during 24 hours along the Amazon plume.
15 Inverse or similar trends of dissolved elements concentration with salinity and negatives
16 or positive slopes of regression the curves indicate if the Amazon River is a source of
17 this element to the West Tropical Atlantic Ocean.

Table S1.

St	Date	Lat N Lon W	Salinity	Chla:P nM	P nM	Preol nM	Ag pM	Ag:P	Al:P	Cd nM	Cd:P	Co pM	Co:P	Cu nM	Cu:P	Fe nM	Fe:P	Mn:P	Mo pM	Mo:P	Ni nM	Ni:P	Pb pM	Pb:P	V nM	V:P
1	4/19/03	11.30.03 56.30.21	33.66	2.36	n.d.	2.97 0.59	11.16	5.1E-07	1.8E-02	0.41	2.0E-05 5.3E-05	34.16	1.5E-05 5.8E-05	1.91	4.9E-04 8.2E-04	0.59	5.6E-03 1.6E-02	9.2E-04 3.0E-04	0.110	9.0E-04 1.7E-03	1.39	1.1E-03 7.1E-04	14.79	3.6E-06	25.88	4.5E-03 4.7E-04
2	4/20/03	11.14.32 54.35.37	32.36	4.42	27.49	0.98	12.17	2.7E-06	2.8E-02	0.43	2.2E-05	31.73	2.8E-05	2.65	1.0E-03	0.64	6.9E-03	1.3E-03	0.108	1.1E-03	1.3	2.4E-03	10.09	6.6E-06	22.63	4.9E-03 2.2E-03
3	4/21/03	10.46.97 52.16.90	35.99	4.41	32.99	2.39	10.48	n.d.	4.9E-03	0.36	3.1E-05	n.d.	9.4E-06	1.32	4.1E-04	n.d.	2.5E-03	8.6E-04	0.123	2.4E-03	1	1.0E-03	n.d.	8.4E-06	29.72	6.1E-03 3.1E-03
4	4/22/03	08.52.57 52.0.11	36.22	4.18	n.d.	4.73 0.43	9.66	1.5E-05	1.3E-03	0.40	2.6E-05 2.7E-05	172.68	4.1E-06	0.70	2.9E-04	3.22	2.9E-03	7.4E-04	0.111	9.1E-04	1.68	9.9E-04	n.d.	1.2E-06	27.43	3.3E-03 7.4E-04
5	4/23/03	06.53.06 52.01.95	25.3		11.78	n.m.	10.31	n.m.	n.m.	0.35	n.m.	96.90	n.m.	4.27	n.m.	2.95	n.m.	n.m.	0.095	n.m.	1.68	n.m.	53.19	n.m.	24.58	n.m.
6	4/24/03	06.59.97 49.59.35	35.87	3.15	26.56	1.58	9.19	2.6E-07	1.1E-02	0.43	2.4E-05	144.73	1.5E-05	0.72	3.9E-04	4.84	4.8E-03	4.9E-04	0.118	4.8E-04	1.62	8.4E-04	n.d.	2.9E-05	30.74	2.6E-03 8.4E-04
7	4/25/03	08.18.32 51.41.08	34.3	2.07	n.d.	4.54 0.86	11.56	n.d.	7.4E-03	0.43	4.1E-05	47.43	9.8E-06	1.28	1.8E-04	1.39	5.8E-03	4.2E-04	0.124	2.5E-03	1.21	5.7E-04	25.40	4.1E-06	30.35	1.9E-03 2.2E-03
8	4/26/03	09.48.55 54.04.95	34.24	2.72	19.30	2.11	10.57	n.d.	3.4E-03	0.42	1.4E-05	32.16	1.1E-05	1.79	4.6E-04	0.41	4.3E-03	1.1E-03	0.113	7.3E-04	1.64	1.1E-03	17.70	7.5E-06	25.89	9.3E-03 5.3E-03
9	4/27/03	11.04.85 56.15.14	33.74	2.88	11.77	2.53	8.61	n.d.	9.2E-03	0.39	2.0E-05	21.34	9.6E-06	1.50	5.4E-04	0.67	3.1E-03	1.2E-03	0.102	1.1E-03	0.88	1.2E-03	15.67	5.9E-06	22.68	8.9E-03 4.9E-03
10	4/30/03	12.59.96 55.57.86	34.59	2.94	n.d.	2.34 0.38	11.18	n.d.	3.5E-03	0.39	2.8E-05 7.1E-05	155.63	1.0E-05	1.37	3.3E-04	2.43	2.3E-03	6.8E-04	0.120	7.2E-04	1.01	8.4E-04	n.d.	4.0E-06	26.32	5.6E-03 7.0E-03
11	5/1/03	11.35.43 55.41.06	34.46	7.66	18.90	2.11	10.10	5.5E-06	5.2E-03	0.42	1.1E-05	31.87	1.3E-05	1.33	4.0E-04	0.89	8.7E-03	1.1E-03	0.111	6.3E-04	1.13	1.1E-03	18.07	3.1E-06	30.17	6.3E-03 3.8E-03
12	5/2/03	10.20.87 55.06.07	33.16	3.21	3.31	2.90	10.50	n.d.	1.2E-02	0.38	1.0E-05	n.d.	1.1E-05	1.78	5.4E-04	4.20	9.0E-03	1.5E-03	0.105	1.8E-03	1.41	1.3E-03	n.d.	4.1E-06	24.81	1.1E-02 8.0E-03
13	5/3/03	08.21.15 55.40.48	31.84	3.95	7.90	2.07	10.37	5.8E-06	6.4E-04	0.36	1.6E-05 9.2E-06	31.75	1.3E-05	3.32	6.1E-04	1.05	4.8E-03	1.4E-03	0.119	2.0E-03	n.d.	1.3E-03	26.26	5.8E-06	28.14	7.4E-03 4.9E-03
14	5/4/03	07.30.62 54.11.92	27.22		n.d.	n.m.	10.66	n.m.	n.m.	0.36	n.m.	56.14	n.m.	4.92	n.m.	2.17	n.m.	n.m.	0.097	n.m.	1.63	n.m.	61.83	n.m.	24.57	n.m.
15	5/4/03	07.46.54 54.21.07	27.53		n.d.	n.m.	10.17	n.m.	n.m.	0.35	n.m.	47.07	n.m.	4.51	n.m.	1.75	n.m.	n.m.	0.100	n.m.	1.71	n.m.	27.93	n.m.	26.99	n.m.
16	5/5/03	09.29.39 55.40.59	32.59	6.59	30.88	1.17	10.02	n.d.	1.4E-02	0.44	2.4E-05	72.78	1.8E-05	2.26	8.4E-04	2.41	5.6E-03	2.1E-03	0.114	2.4E-03	1.36	1.8E-03	n.d.	5.9E-06	32.07	1.1E-02 7.6E-03
17	5/6/03	12.06.89 56.03.56	34		5.10	n.m.	9.84	n.m.	n.m.	0.40	n.m.	143.46	n.m.	1.32	n.m.	2.50	n.m.	n.m.	0.114	n.m.	1.01	n.m.	32.31	n.m.	29.19	n.m.
18	5/10/03	11.20.50 56.30.51	32.83	6.61	6.05	1.92	9.51	2.1E-06	1.3E-02	0.39	1.8E-05 4.7E-05	66.02	1.8E-05	2.08	5.8E-04	2.43	7.8E-03	1.4E-03	0.105	1.9E-03	1.33	1.2E-03	n.d.	3.9E-06	25.01	1.0E-02 1.1E-02
19	5/11/03	10.38.74 54.16.55	34.49		12.10	n.m.	9.83	n.m.	n.m.	0.44	n.m.	85.27	n.m.	1.55	n.m.	3.34	n.m.	n.m.	0.116	n.m.	1.41	n.m.	n.d.	n.m.	27.86	n.m.
20	5/11/03	10.46.48 53.58.69	34.33		28.65	n.m.	10.35	n.m.	n.m.	0.44	n.m.	36.40	n.m.	1.51	n.m.	2.33	n.m.	n.m.	0.131	n.m.	n.d.	n.m.	50.18	n.m.	29.70	n.m.
21	5/12/03	10.42.26 52.31.65	34.83	1.52	22.13	2.67 0.41	8.90	n.d.	4.1E-03	0.42	2.5E-05 3.1E-05	36.02	1.0E-05	0.94	3.1E-04	0.73	6.2E-03	9.0E-04	0.119	1.7E-03	1.54	1.0E-03	37.81	2.4E-06	28.49	7.4E-03 5.7E-03
22	5/12/03	10.42.25 51.43.64	36.3		28.91	n.m.	10.02	n.m.	n.m.	0.44	n.m.	17.32	n.m.	0.54	n.m.	1.03	n.m.	n.m.	0.126	n.m.	n.d.	n.m.	40.37	n.m.	35.69	n.m.
23	5/13/03	10.33.44 50.04.37	35.97	3.06	n.d.	2.72 0.49	8.43	7.2E-07	4.8E-03	0.42	1.2E-05 9.2E-06	94.13	4.7E-06	0.62	2.6E-04	1.99	2.7E-03	1.0E-03	0.113	1.7E-03	1.29	1.3E-03	47.11	1.9E-06	23.82	5.8E-03 5.3E-03
24	5/13/03	10.34.94 49.41.50	36.04		14.55	n.m.	9.76	n.m.	n.m.	0.46	n.m.	49.19	n.m.	0.67	n.m.	1.02	n.m.	n.m.	0.120	n.m.	1.26	n.m.	44.76	n.m.	29.74	n.m.
25	5/14/03	10.26.42 48.18.12	36.17		21.31	n.m.	9.21	n.m.	n.m.	0.43	n.m.	50.47	n.m.	0.46	n.m.	0.79	n.m.	n.m.	0.121	n.m.	1.16	n.m.	31.59	n.m.	28.33	n.m.
26	5/14/03	09.40.92 48.20.06	35.86		n.d.	n.m.	9.02	n.m.	n.m.	0.46	n.m.	n.d.	n.m.	0.64	n.m.	2.43	n.m.	n.m.	0.127	n.m.	1.26	n.m.	49.02	n.m.	31.89	n.m.
27	5/15/03	08.14.00 48.29.45	36.03	5.58	19.26	2.11 1.14	9.63	3.5E-06	8.6E-03	0.45	1.7E-05 1.2E-05	40.18	n.m.	0.67	3.8E-04	1.23	7.3E-03	1.4E-03	0.120	1.5E-03	1.39	1.8E-03	62.38	5.1E-06	30.55	7.9E-03 1.4E-03
28	5/16/03	07.51.41 50.03.96	35.66	1.71	21.76	2.53 0.41	9.94	n.d.	5.7E-03	0.40	1.4E-05 2.6E-05	90.68	7.2E-06	0.75	3.7E-04	1.29	5.3E-03	1.2E-03	0.119	1.5E-03	1.11	1.4E-03	43.59	2.0E-06	29.66	7.8E-03 6.1E-03
29	5/16/03	07.42.95 50.26.49	35.65		n.d.	n.m.	10.12	n.m.	n.m.	0.43	n.m.	42.99	n.m.	0.75	n.m.	1.83	n.m.	n.m.	0.121	n.m.	1.22	n.m.	42.89	n.m.	30.43	n.m.
30	5/17/03	06.47.97 52.46.22	24.44		n.d.	n.m.	14.92	n.m.	n.m.	0.31	n.m.	80.14	n.m.	6.10	n.m.	n.d.	n.m.	n.m.	0.080	n.m.	1.95	n.m.	13.30	n.m.	21.67	n.m.
31	5/17/03	07.12.6	22.4		33.72	n.m.	15.50	n.m.	n.m.	0.31	n.m.	82.23	n.m.	7.69	n.m.	8.70	n.m.	n.m.	0.079	n.m.	1.93	n.m.	77.77	n.m.	22.53	n.m.
32	5/17/03	07.40.13 54.09.59	26.41		n.d.	n.m.	10.62	n.m.	n.m.	0.34	n.m.	95.35	n.m.	5.32	n.m.	3.80	n.m.	n.m.	0.088	n.m.	n.d.	n.m.	36.01	n.m.	21.46	n.m.
33	5/17/03	07.53.18 54.32.4	29.88		8.82	n.m.	10.10	n.m.	n.m.	0.40	n.m.	94.20	n.m.	3.91	n.m.	3.27	n.m.	n.m.	0.098	n.m.	n.d.	n.m.	24.96	n.m.	28.09	n.m.
34	5/18/03	08.07.90 55.07.6	37.38		n.d.	n.m.	n.d.	n.m.	n.m.	0.40	n.m.	50.13	n.m.	2.46	n.m.	0.94	n.m.	n.m.	0.105	n.m.	1.68	n.m.	n.d.	n.m.	25.98	n.m.
35	5/18/03	08.19.08 55.37.7	30.95		n.d.	n.m.	10.16	n.m.	n.m.	0.41	n.m.	49.22	n.m.	3.12	n.m.	1.24	n.m.	n.m.	0.098	n.m.	1.73	n.m.	14.88	n.m.	n.m.	n.m.
36	5/18/03	08.37.95 56.11.99	31.6		3.76	n.m.	11.97	n.m.	n.m.	0.53	n.m.	78.35	n.m.	3.66	n.m.	1.62	n.m.	n.m.	0.120	n.m.	n.d.	n.m.	40.52	n.m.	32.86	n.m.
37	5/19/03	08.54.63 56.47.82	31.69		2.31	n.m.	10.31	n.m.	n.m.	0.39	n.m.	60.63	n.m.	2.77	n.m.	2.05	n.m.	n.m.	0.105	n.m.	1.6	n.m.	34.17	n.m.	n.m.	n.m.
38	5/19/03	09.55.59 57.53.71	32.86		n.d.	n.m.	10.18	n.m.	n.m.	0.43	n.m.	52.37	n.m.	2.15	n.m.	2.00	n.m.	n.m.	0.108	n.m.	1.55	n.m.	32.04	n.m.	29.77	n.m.
39	5/19/03	10.70.92 57.22.61	31.64		2.36	n.m.	10.42	n.m.	n.m.	0.38	n.m.	122.79	n.m.	2.71	n.m.	2.18	n.m.	n.m.	0.105	n.m.	1.43	n.m.	24.98	n.m.	28.75	n.m.
40	5/20/03	10.44.52 55.23.24	32.6		25.08	n.m.	10.03	n.m.	n.m.	0.43	n.m.	60.81	n.m.	2.07	n.m.	1.85	n.m.	n.m.	0.108	n.m.	1.83	n.m.	33.83	n.m.	20.92	n.m.
41	5/20/03	10.52.55 54.48.06	32.21		n.d.	n.m.	9.47	n.m.	n.m.	0.41	n.m.	30.35	n.m.	1.50	n.m.	1.38	n.m.	n.m.	0.090	n.m.	n.d.	n.m.	11.68	n.m.	21.52	n.m.

