

Excess nitrogen as a marker of intense dinitrogen fixation in the Western Tropical South Pacific Ocean: impact on the thermocline waters of the South Pacific

Alain Fumenia¹, Thierry Moutin¹, Sophie Bonnet², Mar Benavides^{1,4}, Anne Petrenko¹, Sandra Helias Nunige¹, and Christophe Maes³

Supplementary

Table S1: Oceanographic cruises available in GLODAPv2 database for the South Pacific. The cruises presented figure 12 are marked with a star.

N° of cruise	New expocode GLODAP.v2	WOCE name	Date	Ship	Chief scientists
1	09AR19930404	P11A	Mar-Apr 1993	RV Aurora Australis	Rintoul
2	09FA19930624*	P11S	Jun-July 1993	RV Franklin	Church
3	49NZ20072211*	P14C	Oct-Dec 2007	RV Mirai	Takeshi Kawano
4	31DS19960105	P14S P15S	Jan-Mar 1996	RV Discoverer	Bullister, Johnson, Feeley, Roberts
5	09FA20010524*	P15	May-July 2001	RV Franklin	Wijffels
6	31WT19910831*	P16C	Aug-Oct 1991	RV T. Washington	Talley
7	325020060213	P16N_2006	Feb-Mar 2006	RV Thomas.G. Thompson	Sabine
8	31WT19910716*	P16S	July Aug 1991	RV T. Washington	Swift
9	316N19920901*	P16A-P17A	Oct-Nov 1992	RV Knorr	Reid
10	33RR20050109	P16S_2005	Jan-Feb 2005	RV Roger Revelle	Sloyan
11	31DS19940126*	P18	Jan-Apr 1994	RV Discoverer	Taft, Johnson
12	33RO20071215	P18_2007	Dec-Jan 2007	RV Ronald H. Brown	Bullister, Johnson
13	316N19930222*	P19	Feb-Apr 1993	RV Knorr	Talley
14	316N19920502	P06	May-July 1992	RV Knorr	Bryden, McCartney, Toole, Whoi
15	49NZ20030803	P06 _2003	Aug-Oct 2003	RV Mirai	Watanabe, Fukasawa
16	318M20091121*	P06_2009	Nov 09- Feb 2010	RV Melville	Curry, Macdonald,
17	318M19940327	P21_1994	Mar-May 1994	RV Melville	Bryden, McCartney
18	49NZ20090410*	P21_2009	Apr-June 2009	RV Mirai	Murata, Uchida
19	318M19730822	/	Aug 73-June 1974	RV Melville	Weiss, Brewer, Biscaye, Takahashi, Broecker, Edmond, Craig
20	325019940125*	/	Jan-Feb 1994	RV Thomas.G. Thompson	Dean, Roemmich
21	31OC19870606*	/	June-July 1987	RV Oceanographer	Stanley, Hayes
22	49HH20011127*	/	Nov 01-Jan 2002	RV Hakuho-Maru	Terazaki
23	325020131025	GT13	Oct-Dec 2013	RV Thomas.G. Thompson	German, Cutter

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20 **Figures caption**

Fig. 1. Map of depths (dbar) on isopycnal surface 24.7 (a), and of isopycnal surface 26.3 (b). The data come from GLODAPv2 database (Table S1). Continuous black lines represent major large-scale currents in the South Pacific (details are available in figure 2).

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Fig. S2. Mean N^* ($\mu\text{mol kg}^{-1}$) ($\pm\text{sd}$) between longitude [150°E-180°], [180°-150°W], [150°W-120°W], [120°W-90°W], [90°W-80°W] and between latitude [5°S-15°S], 15°S-23°S], 23°S-32°S], 32°S-45°S].

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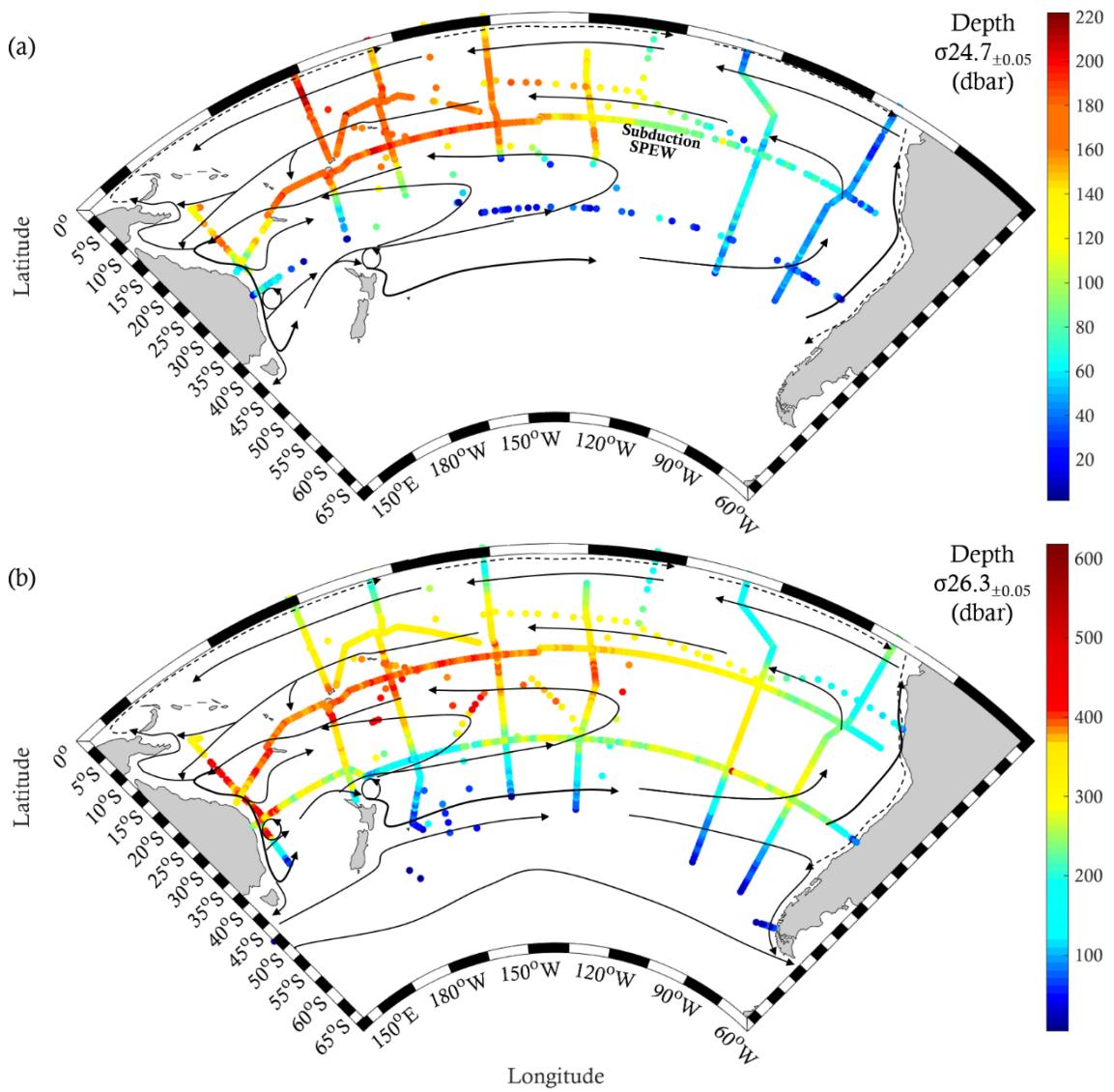
Fig. S3. N^* ($\mu\text{mol kg}^{-1}$) vs. density (kg m^{-3}) for different sections of GLODAPv2 database.

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Fig. S4. N^* ($\mu\text{mol kg}^{-1}$) on $\sigma_{24.7}$ (green line) and on $\sigma_{26.3}$ (black line) vs latitude for (a) sections (P14C 1991), (b) section P14S P15S (1996), (c) section P16S (2005) and (d) P18 (2007). Detail of sections is available in table S1.

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Fig. S5. N^* ($\mu\text{mol kg}^{-1}$) on isopycnal $\sigma_{24.7}$ (green line) and on isopycnal $\sigma_{26.3}$ (black line) vs longitude for (a) sections (cruise 20, 1994), (b) section GT13 (2013), (c and d) section P21 (1994) and (2009), (e and f) section P06 (1992) and (2003). Detail of sections is available in table S1.



40 **Figure S1. a.b.**

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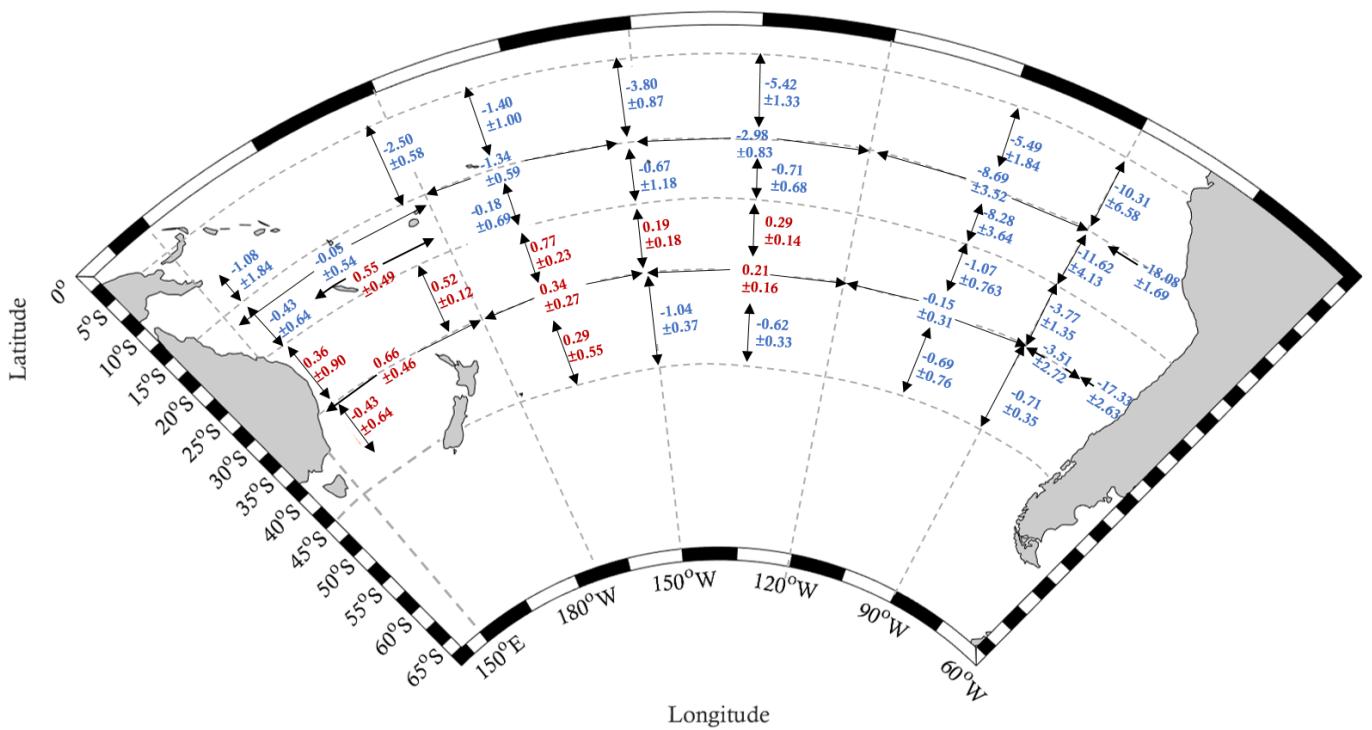


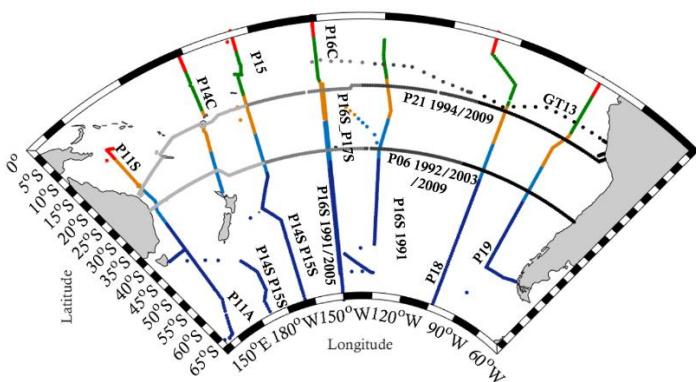
Figure S2

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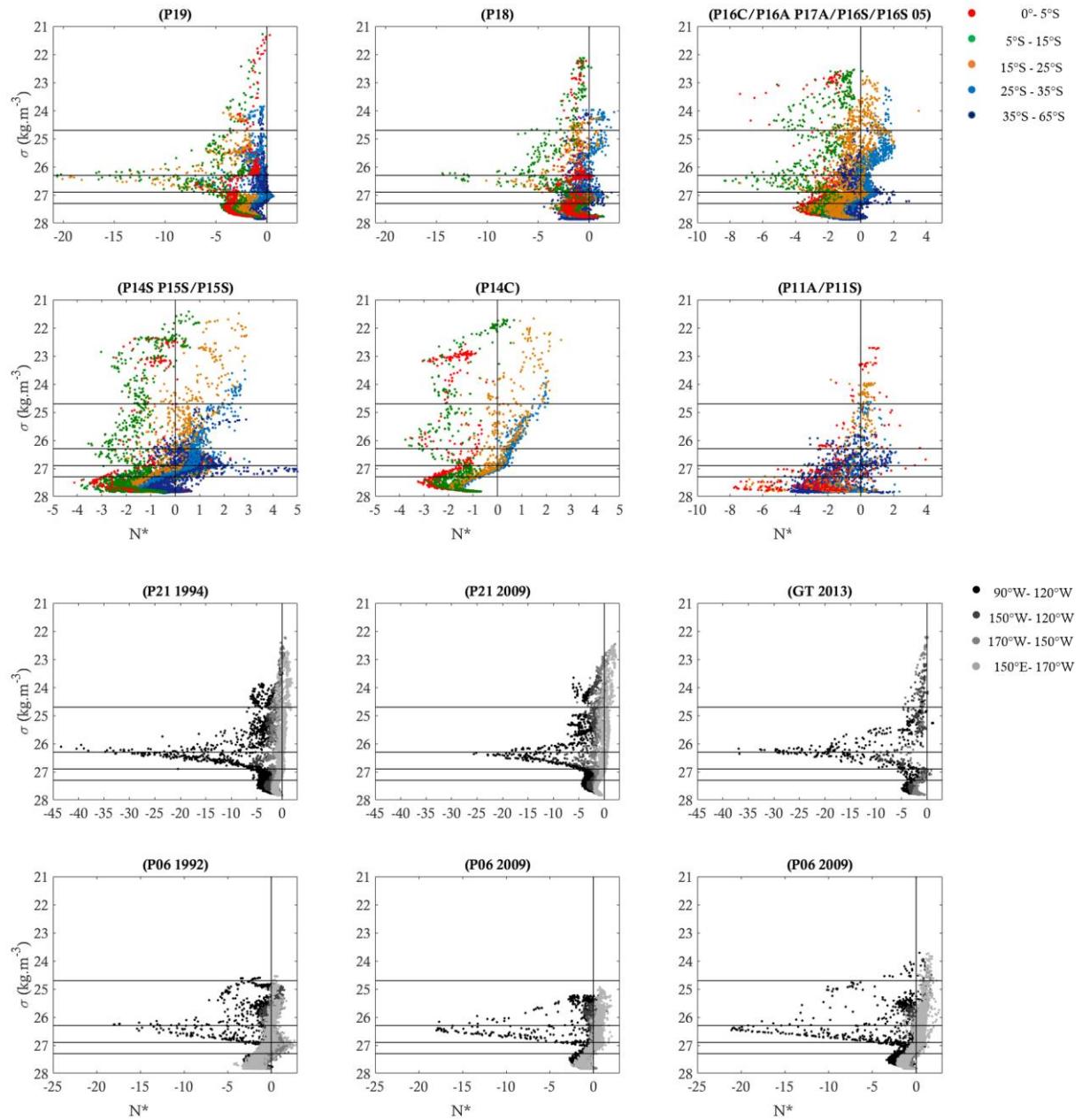


Figure S3

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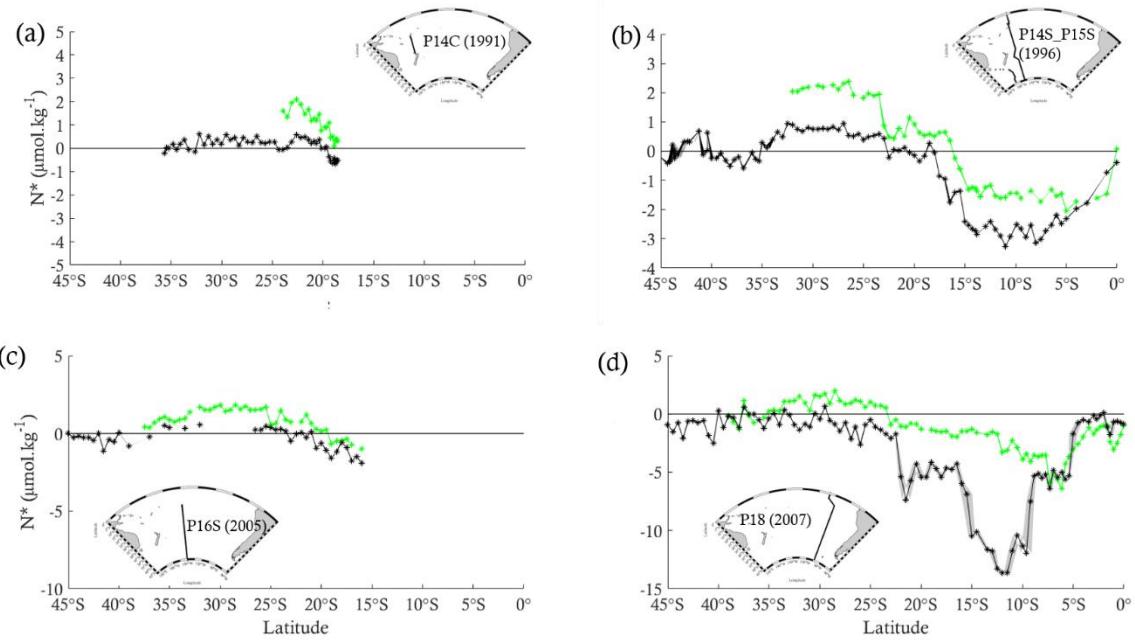


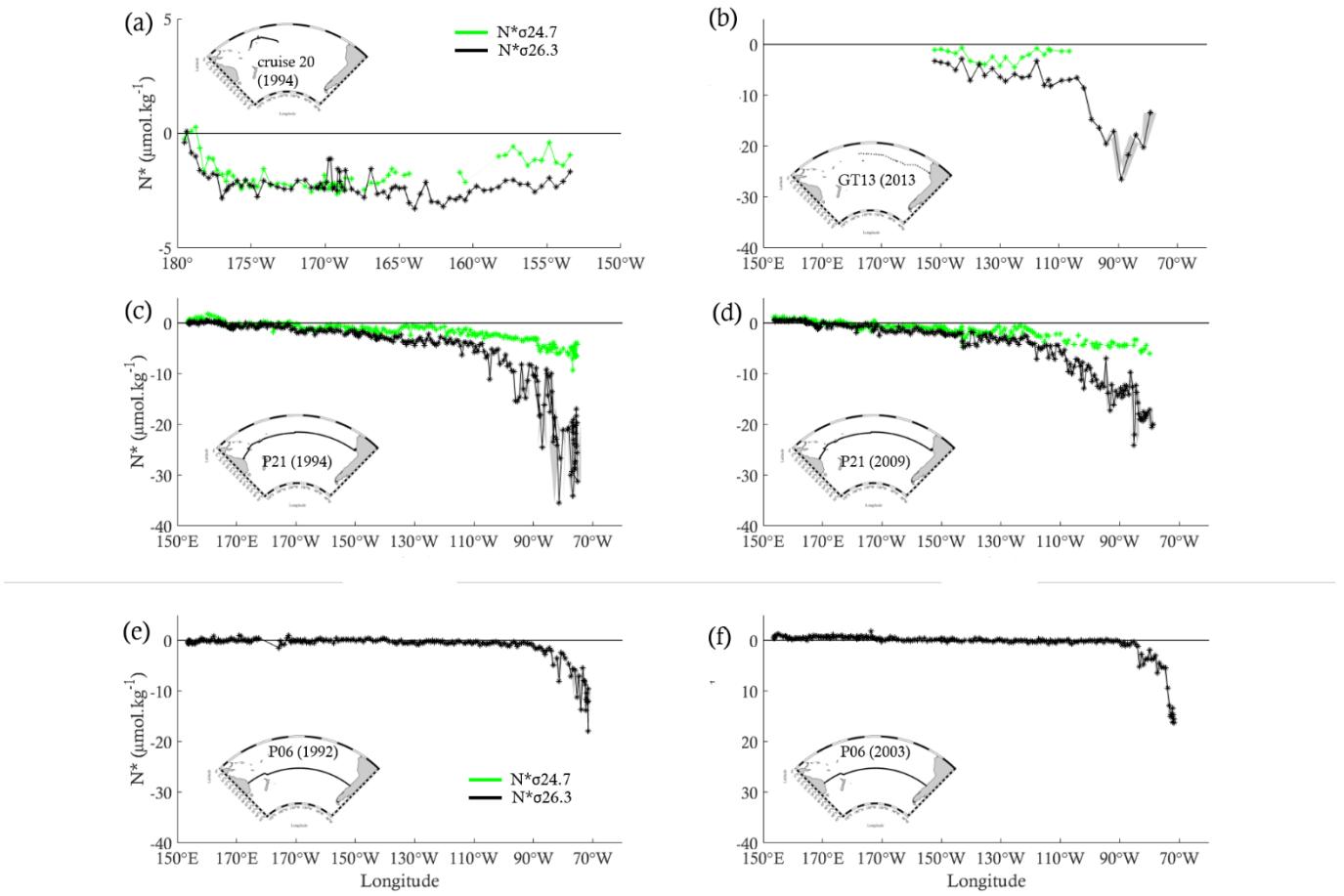
Figure S4. a.b.c.d.

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Figure S5. a.b.c.d.e.f