



# TMC CTD LOG

## RR 1813

Aug 10 – Sept 12, 2018

Start 2018 08 16 14 00  
End

MM DD HH mm

R2R event

###

CTD cast  
TM003

EPOCH

1

DAY

2

LAT DD MM.MMMM LON DD MM.MMMM PROCESS Station ID Record #  
50 .1495 -145 .0870 TM2 cast 95

OPERATOR

Brzezinski

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	$\delta^{15}\text{NO}_3$	respiration	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a	
12																		
11																		
<del>10</del> <sup>12</sup>		10	65%	3	X	X	X		X	X	X		X	X		X	X	X
<del>10</del> <sup>11</sup>		9	65%	3														
89		8	40%	8	X	X	X	Si <sup>1</sup>	X	X	X		X	X		X	X	X
<del>78</del>		7	40%	8				C <sup>1</sup>										
<del>57</del>	✓	6	20%	20	X	X	X		X	X	X	X	X	X		X	X	X
<del>56</del>	✓	5	20%	20	X	X	X		X	X	X		X	X	X	X	X	X
<del>45</del>	✓	4	10%	32	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X	X
3	✓	3	10%	32				C <sup>1</sup>										
2	✓	2	1%	70	X	X	X		X	X	X	X	X	X		X	X	X
1	✓	1	1%	70											X	X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)

YYYV 2018 08 MM DD HH mm R2R event ### CTD cast  
 2018 08 22 17 03 20180822.1402.001 TMO07  
 RR1813-TMO07  
 EPOCH 1 DAY 8  
 OPERATOR Brzezinski

PROCESS Station ID Record #  
 EPOCH 08

LAT DD MM.MMMM LON DD MM.MMMM  
 50 .3885 -145 .1413

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ <sup>15</sup> N <sub>2</sub> O <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓		65%	3	X	X	X		X	X	X		X	X		X	X
11	✓		65%	3												X	X
9/10	✓/✓		40%	8	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
8	✓		40%	8				C <sup>1</sup>								X	X
7	✓		20%	20	X	X	X		X	X	X	X	X	X		X	X
6	✓		20%	20	X	X	X		X	X	X		X	X	X	X	X
4/5	✓/✓		10%	32	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
3	✓		10%	32				Ci <sup>1</sup>								X	X
2	✓		1%	70	X	X	X		X	X	X	X	X	X		X	X
1	✓		1%	70											X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation (C) Go-Flo 10,6,4,2

also used for NPP + <sup>15</sup>N/<sup>13</sup>C  
 ↳ Gross ↳ Marchetti

CTD software glitch. Triggered by wire out

TMO06 aborted due to comm error

YYYY

MM

DD

HH

mm

R2R event

###

DAY

Start  
End

2018 08 22 10 15

20180822.1915.00

RR1813\_TM008

CTD cast  
TM008

1

8

LAT DD

MM.MMM

LON DD

MM.MMM

PROCESS Station ID

Record #

OPERATOR

Start  
End

50 .38409

-145 .13507

EPOCH1 08

20

Brzezinski

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓		40	8	X	X			X							X
11	✓		40	8					X							
9/10	<del>✓</del>		40	8					X							
8	✓		40	8					X							
7	✓		40	8					X							
6	✓		10	32	X	X			X							X
4/5	<del>✓</del>		10	32					X							
3	✓		10	32					X							
2	✓		10	32					X							
1	✓		10	32					X							

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2

EPOCH 2 DAY 1

R2R event ### CTD cast  
20180823.1303.001 TMO09

MM DD HH mm

RRR13-TMO09

Start End

2018 08 23 04 03

MM.MMMM LON DD MM.MMMM

MM.MMMM

OPERATOR Brzezinski

PROCESS Station ID Record #  
EPOCH2.01 35

LAT DD MM.MMMM LON DD MM.MMMM  
50 .41772 -145 .109376

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] $\delta^{15}NO_3$	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓			50												
11	✓			65												
9/10	✓/✓			80												
8	✓			95												
7	✓			110												
6	✓			145												
4/5	✓/✓			195												
3	✓			240												
2	✓			330												
1	✓			500												

← arm button first then fire button  
 ← green fire light came on, did not go out

Pete Morton trace metals  
 RS232 comms failure at bottom of cast

YYY YYY DD MM HH mm RZR event ### CTD cast  
 Start 2018 08 24 02 52 20180824.152.001 TMO10  
 End  
 EPOCH DAY  
 2 2

LAT DD MM.MMM LON DD MM.MMM PROCESS Station ID Record # OPERATOR  
 Start 50 .47300 -145 .11337 EPOCH202 2 Brzezinski  
 End

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓		65%	3	X	X	X		X	X	X		X	X		X	X
11	✓		65%	3												X	X
9/10	✓		40%	8	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
8	✓		40%	8				C <sup>1</sup>								X	X
7	✓		20%	20	X	X	X		X	X	X	X	X	X		X	X
6	✓		20%	20											X	X	X
4/5	✓		10%	32	X	X	X	Si <sup>1</sup>	X	X	X		X	X		X	X
3	✓		10%	32				Ci <sup>1</sup>								X	X
2	✓		1%	70	X	X	X		X	X	X	X	X	X		X	X
1	✓		1%	70											X	X	X

<sup>1</sup>denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2 for Groff NPP  
 \* Marchetti 15/13 N/C

RS232 error at 50m on way up.  
 Manual fire 32, 20, 8, 3m

overflow error light on constantly

Start **YYYY** **MM** **DD** **HH** **mm** **R2R event** **###** **EPOCH** **DAY**  
 2018 08 26 12 54 20180826\_1254\_001 2 H  
 End **MM** **DD** **CTD cast**  
 .535655 -145 .030783 RR1813-TM011 TM011

**LAT DD** **MM.MMM** **LON DD** **MM.MMM** **PROCESS Station ID** **Record #** **OPERATOR**  
 50 .535655 -145 .030783 EPOCH2 04 80 Brzezinski

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓		65%	3	X	X	X		X	X	X		X	X		X	X
11	✓		65%	3												X	X
9/10	✓		40%	9	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
8	✓		40%	9				C <sup>1</sup>								X	X
7	✓		20%	20	X	X	X		X	X	X		X	X		X	X
6	✓		20%	20	X	X	X								X	X	X
4/5	✓		10%	32	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
3	✓		10%	32				Ci <sup>1</sup>								X	X
2	✓		1%	70	X	X	X		X	X	X		X	X		X	X
1	✓		1%	70											X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2  
 modified TM2.  
 Marchetti, Graff  
 former TMI

EPOCH 2 DAY 5

RZR event ### CTD cast  
20180827.1058.001 TMO14  
RA1813-TMO14

YYWY MM DD HH mm  
2018 08 29 10 58

OPERATOR Brzezinski

PROCESS Station ID Record #  
EPOCH2\_05 13

LAT DD MM.MMMM LON DD MM.MMMM  
50 .567381 -144 .993589

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓			15													
11	✓			15													
9/10	<del>✓</del>			15													
8	✓			15													
7	✓			15													
6	✓			15													
4/5	<del>✓</del>			15													
3	✓			15													
2	✓			15													
1	✓			15													

Adrian's Fe addition experiment, parameters unspecified



Start **2018** **08** **28** **00** **01** **15** **20180828.0010.001** **###** **5**  
 End **2018** **08** **28** **01** **15** **RR1813-TMO15** **CTD cast** **TMO15**  
**MM** **DD** **HH** **mm** **RZR event**

LAT DD **50** MM.MMMM **47683** LON DD **-144** MM.MMMM **897563** PROCESS Station ID **EROCH2 DH** Record #  
 OPERATOR **SANTORO**

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] δ <sup>15</sup> N <sub>2</sub> O <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	/	10		10												
11	/	9		36												
9/10	/	8		80												
8	/	7		95												
7	/	6		110												
6	/	5		145												
4/5	/	4		195												
3	✓	3		240												
2	✓	2		330												
1	✓	1		500												

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2

start scan

Start **YYYY** 2018 **MM** 08 **DD** 28 **HH** 04 **mm** 58 **R2R event** **###** 20180828.1357.001 **CTD cast** TMO16  
 End **MM** 08 **DD** 28 **HH** 04 **mm** 58 **R2R event** RR1813-TMO16 **###** 2  
**DAY** 6

PROCESS Station ID Record #

EPOCH 20  
OPERATOR Brzezinski

LON DD MM.MMMM

144.846206

LAT DD MM.MMMM

50.476378

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓	10	40%	12	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
11	✓	9	40%	12				C <sup>1</sup>							X	X	X
9/10	✓	8	20%	18	X	X	X		X	X	X		X	X	X	X	X
8	✓	7	20%	18											X	X	X
7	✓	6	10%	28	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X	X
6	✓	5	10%	28				Ci <sup>1</sup>								X	X
4/5	✓	4	5%	50		X	X		X	X	X		X	X	X	X	X
3	✓	3	5%	50				X								X	X
2	✓	2	1%	68	X	X	X		X	X	X		X	X	X	X	X
1	✓	1	1%	68											X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2

YYYY

MM

DD

HH

mm

R2R event

###

EPOCH DAY

Start  
End

2018 08 30 04 00 20180830.1300.001 TMO18  
RR1813-TMO18

2 8

LAT DD MM.MMMM LON DD MM.MMMM  
Start 50 .483563  
End

PROCESS Station ID Record #  
EPOCH2 08 10

OPERATOR  
Brzezinski

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] <sup>CTD</sup> δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12	✓		40%	12	X	X	X		X	X	X		X		X	X
11	✓		40%	12												X
9/10	✓/✓		20%	18	X	X	X	<del>X</del>	X	X	X		X	X	X	X
8	✓		20%	18				<del>X</del>								X
7	✓		10%	28	X	X	X		X	X	X	X	X		X	X
6	✓		10%	28										X	X	X
4/5	✓/✓		5%	50	X	X	X	<del>X</del>	X	X	X		X		X	X
3	✓		5%	50				<del>X</del>							X	X
2	✓		1%	68	X	X	X		X	X	X	X	X		X	X
1	✓		1%	68										X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2

EPOCH 3 DAY 2

R2R event ### CTD cast  
20180901.1259.001 TMO20

MM DD HH mm

RR1813-TMG20

Start 2018 09 01 132 59

End

OPERATOR  
Brzezinski

PROCESS Station ID Record #  
EPOCH3 02 5

LAT DD MM.MMMM LON DD MM.MMMM

Start 50 .582789

End

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12			40%	9	X	X	X		X	X	X		X		X	X
11			40%	9											X	X
9/10	✓		20%	20	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X
8	✓		20%	20				C <sup>1</sup>							X	X
7	✓		10%	34	X	X	X		X	X	X				X	X
6	✓		10%	34	X	X	X		X	X	X				X	X
4/5	✓		5%	50	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X
3	✓		5%	50				Ci <sup>1</sup>							X	X
2	✓		1%	63	X	X	X		X	X	X		X		X	X
1	✓		1%	63										X	X	X

<sup>1</sup>denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C) Go-Flo 10,6,4,2

Go Flo position 4+9 empty



YYYY

MM

DD

HH

mm

R2R event

###

DAY

Start 2018 09 03 12 57 20180903.1257.001 CTD cast TMO23  
 End

EPOCH 3

DAY 4

LAT DD MM.MMMM LON DD MM.MMMM PROCESS Station ID Record # OPERATOR  
 Start 50 .592463 -144 .728161 EPOCH3 04 10 Brzezinski  
 End

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ] <sup>15</sup> N/13C	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12			65%	3	X	X	X		X	X	X		X		X	X
11			65%	3											X	X
9/10	✓		40%	9	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X
8	✓		40%	9				C <sup>1</sup>							X	X
7	✓		20%	19	X	X	X		X	X	X	X	X		X	X
6	✓		20%	19										X	X	X
4/5	✓		10%	32	X	X	X	Si <sup>1</sup>	X	X	X		X	X	X	X
3	✓		10%	32				Ci <sup>1</sup>							X	X
2	✓		1%	67	X	X	X		X	X	X	X	X		X	X
1	✓		1%	67										X	X	X

<sup>1</sup>denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2

# EXPORTS

EXPORT Processes in the Ocean from Remote Sensing

YYY Y DD MM HH MM R2R event ### CTD cast DAY  
 2018 09 06 12 44 20180906.1244 .001 TMO25 7  
 RR1813-TMO25

EPOCH 3

LAT DD MM.MMMM LON DD MM.MMMM PROCESS Station ID Record # OPERATOR  
 50 .469228 -114 .701421 EPOCH3 07 15 Brzezinski

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	<sup>15</sup> N/ <sup>13</sup> C uptake	respiration	Chl_a
12				8												
11				8												
9/10				8												
8				8												
7				8												
6	✓			55												
4/5	✓			55												
3	✓			55												
2	✓			55												
1	✓			55												

Cast for Jason and James, OSU

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation (C)

WYBY MM DD HH mm R2R event ### CTD cast  
 2018 09 07 12 56 20180907.1256 .001  
 End RR1812-TM026 TM026

EPOCH 3 DAY 8

LAT DD MM.MMM LON DD MM.MMM PROCESS Station ID Record # OPERATOR  
 Start 50 .432259 -144 .691025 EPOCH3 08 5 Brzezinski  
 End

Pylon Position	Fired?	Go-Flo	%lo	Depth Target	nut	BSi	Si uptake	Fe, Si limit	RNA /DNA	Bio Fe	[Fe]	Nitrification rate	[NH <sub>4</sub> <sup>+</sup> ]	δ15NO <sub>3</sub>	resp	<sup>15</sup> N/ <sup>13</sup> C uptake POC	Chl_a
12			40%	9	X	X	X		X	X	X		X			X	X
11			40%	9												X	X
9/10	✓		20%	20	X	X	X	Si <sup>1</sup>	X	X	X		X		X	X	X
8	✓		20%	20				C <sup>1</sup>								X	X
7	✓		10%	31	X	X	X		X	X	X	X				X	X
6	✓		10%	31											X	X	X
4/5	✓		5%	42	X	X	X	Si <sup>1</sup>	X	X	X		X			X	X
3	✓		5%	42				Ci <sup>1</sup>								X	X
2	✓		1%	67	X	X	X		X	X	X	X	X			X	X
1	✓		1%	69											X	X	X

<sup>1</sup> denotes limitation effect of Fe and Si on either Si uptake (Si) or carbon fixation(C)Go-Flo 10,6,4,2



YYYY MM DD HH UTC  
 R2R event ###

EPOCH DAY  
 1 2

Start 2018 08 16 17 20  
 End -115 08 16 17 20  
 20180816.119.001 CTD cast  
 RR1813\_TM002 TM002

LAT DD MM.MMMM LON DD MM.MMMM PROCESS Station ID Record # OPERATOR  
 50 .1495 -145 .0870 TM1 10 Brzezinski

Pylon Position	Fired?	Go-Flo	% <sub>0</sub>	Depth Target	NPP	HPLC	POC	IFCB	IFCB	Cphyto/FCM/IFCB	Meatrans	Bact Genome
12												
11												
<del>12</del>	✓	10	65%	3							X ✓	
<del>10</del>	✓	9	65%	3		1					X ✓	
89	✓	8	65%	3							X ✓	
78	✓	7	65%	3							X ✓	
67	✓	6	65%	3								X ✓
56	✓	5	65%	3		in	in	in		X		X
45	✓	4	40%	8		x	x	x		X		
3	✓	3	20%	20		x	x	x		X		
2	✓	2	10%	32		x	x	x		X		
1	✓	1	1%	70		x	x	x		X		

\*in = inline sample due to inadequate water

125 mL  
 1 L

# EXPORTS

Export Processes in the Ocean from Remote Sensing

EVENT\_TM\_CTD\_CAST\_ProcessShip (TCM\_CTDCastEvent.docx.pdf)  
**R2R event** ###

DAY

YYYY MM DD HH mm

Start 2018 08 12 22 49 20180812.2249.001 CTD cast  
 End RR1613-deck-fe3 T1001

EPOCH 01

DAY -2

LAT DD MM.MM LON DD MM.MMM PROCESS Station ID Record # OPERATOR

Start End

MBR2

Pylon Position	Five BMS	Notes
12		all bottles fired between 65-61m as package raised slowly
11		
10		Used to soak Go-Flo to clean them
9		
8		
7		
6		
5		
4		
3		
2		
1		