

PRODUCTIVITY

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 091 Transect #: 37
 Start time (UTC): 09:59 End time (UTC): 10:34 Bottom Depth: ~480
 Start date (UTC): 2019/07/14 End date (UTC): 2019/07/14 Initials: HO

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
WS, HS	6	100 ✓		✓				✓				✓		
WS, HS	7	78 ✓		✓	✓	✓		✓				✓		
WS, HS	8	51 ✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
CS	9	51 ✓												
CS	10	51 ✓												
WS, HS	11	35 ✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
JT	12	35 ✓												
JT	13	35 ✓												
	14	35 ✓												
HS	15	27 ✓		✓		✓	✓		✓	✓			✓	✓
CS	16	27 ✓												
CS	17	27 ✓												
WS, HS	18	22 ✓		✓	✓	✓		✓				✓		
WS, HS	19	16 ✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
WS, HS	20	8 ✓		✓	✓	✓		✓				✓		
	21	0 ✓												
CS	22	0 ✓												
CS	23	0 ✓												
WS, HS, ZS	24	0 ✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Sampler													

Sampling depths – Fixed: 5, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

0 ✓ 8 ✓ 16 ✓ 22 ✓ 35 ✓ 51 ✓ 78 ✓
 0 0 35 ✓ 51 ✓
 0 35 ✓ 51 ✓
 35

grazing water

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 092 Transect #: 37
Start time (UTC): 11:49 End time (UTC): 11:55 Bottom Depth: 480
Start date (UTC): 2019/07/14 End date (UTC): 2019/07/14 Initials: YX

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
	1	35												
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	9													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													
	21													
	22													
	23													
	24													
	Sam pler													

NO DAUPOR

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A12 CTD cast #: 093 Transect #: 37
 Start time (UTC): 13:09 End time (UTC): 13:42 Bottom Depth: 272
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: WJZ

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS 10mab	1	260		✓										
HS	2	250		✓										
HS	3	200		✓										
HS	4	150		✓										
HS	5	120		✓										
WS, HS	6	100		✓				✓				✓		
	7	100												
WS, HS	8	80		✓				✓				✓		
	9	80												
WS, HS	10	60		✓				✓				✓		
	11	50												
WS, HS	12	40		✓		✓		✓				✓		
	13	40												
WS, HS	14	30		✓		✓		✓				✓	✓	✓
	15	30												
CS	16	30												
WS, HS Chl max	17	20		✓		✓		✓	✓	✓		✓	✓	✓
	18	20												
	19	20												
	20	10		✓		✓		✓				✓		
	21	10												
	22	Sfc												
CS	23	Sfc												
WS, WS, HS	24	Sfc		✓		✓	✓	✓	✓	✓		✓	✓	✓
	Sam pler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab
 CS 0-10, 20/30, 40/60, 80/100
 0-20, 20/30, 260

TN-368 CTD Cast Sheet

Station Number: A11 CTD cast #: 094 Transect #: 37
 Start time (UTC): 14:27 End time (UTC): _____ Bottom Depth: 150
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: WZ

HS

WS, HS

CS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
10mab	1	142		✓										
HS	2	120		✓										
HS, WS	3	100		✓				✓				✓		
HS, WS	4	80		✓				✓				✓		
HS, WS	5	60		✓				✓				✓		
	6	60												
WS, HS	7	42		✓	✓			✓				✓		
CS	8	42												
WS, HS	9	29		✓	✓			✓	✓	✓		✓	✓	✓
	10	29												
	11	29												
WS, HS	12	24		✓									✓	✓
CS	13	24												
WS, HS	14	19		✓	✓			✓				✓		
	15	19												
WS, HS	16	12		✓	✓			✓				✓		
	17	12												
WS, HS	18	9		✓	✓			✓				✓		
	19	9												
WS, HS	20	5		✓	✓			✓				✓		
	21	sfc												
	22	sfc												
WS, WS, HS	23	sfc		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
CS	24	sfc												
	Sam pler													

Sampling depths – Fixed: ~~Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300~~
 Floating: Chl max, 10mab ~~0.5, 9, 12, 19, 29, 42, 60, 80, 100, 120, 142~~

CS 0
 0 9' 12' 19' 29' 60'

TN-368 CTD Cast Sheet

Station Number: A10 CTD cast #: 095 Transect #: 37
 Start time (UTC): 15:50 End time (UTC): 16:07 Bottom Depth: 137
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: WZ / ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	14C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS 10mab	1	125		✓										
HS	2	120		✓										
WS, HS	3	100		✓				✓				✓		
	4	100												
WS, HS	5	80		✓				✓				✓		
	6	80												
WS, HS	7	60		✓				✓				✓		
	8	60												
WS	9	40						✓				✓		
HS	10	40		✓		✓								
WS	11	28						✓				✓		
HS	12	28		✓		✓							✓	✓
CS	13	28												
HS	14	20		✓		✓			✓	✓			✓	✓
WS	15	20						✓				✓		
CS, HS	16	20				✓								
WS	17	10						✓				✓		
HS	18	10		✓		✓								
WS	19	Sfc						✓				✓		
ZS, HS	20	Sfc		✓		✓	✓		✓	✓			✓	✓
CS	21	Sfc												
	22	Sfc												
	23													
	24													
	Sam pler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, ~~150, 200, 250, 300~~
 Floating: Chl max, 10mab 0 10 20 30 40 60 80 100 125
 CS 0 20 30
 0

TN-368 CTD Cast Sheet

Station Number: A9 CTD cast #: 096 Transect #: 37
 Start time (UTC): 16:48 End time (UTC): 17:04 Bottom Depth: 128
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	118 ✓		✓										
HS	2	100 ✓		✓										
HS, WS	3	100 ✓		✓										
	4	80 ✓												
HS, WS	5	80 ✓		✓										
	6	60 ✓												
HS, WS	7	60 ✓		✓										
HS	8	40 ✓		✓		✓								
WS	9	40 ✓												
HS	10	30 ✓		✓		✓								
WS	11	30 ✓												
CS	12	30 ✓												
WS	13	25 ✓												
HS	14	25 ✓		✓		✓			✓	✓			✓	✓
WS	15	20 ✓												
HS	16	20 ✓		✓		✓								
CS	17	20 ✓												
HS	18	10 ✓		✓		✓								
WS	19	10 ✓												
	20	Sfc ✓												
CS	21	Sfc ✓												
	22	Sfc ✓												
ZS, HS, WS	23	Sfc ✓		✓		✓	✓		✓	✓			✓	✓
	24													
	Sam pler													

25
118
Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: AB CTD cast #: 097 Transect #: 37
 Start time (UTC): 17:45 End time (UTC): 18:00 Bottom Depth: 120
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	110 ✓		✓										
HS,WS	2	100 ✓		✓				✓				✓		
HS,WS	3	80 ✓		✓				✓				✓		
	4	80 ✓												
HS,WS	5	60 ✓		✓				✓				✓		
	6	60 ✓												
WS	7	40 ✓						✓				✓		
ZS,HS	8	40 ✓		✓		✓								
CS	9	40 ✓												
HS	10	25 ✓		✓		✓								
WS	11	25 ✓						✓				✓		
CS	12	25 ✓												
WS	13	20 ✓						✓				✓		
ZS,HS	14	20 ✓		✓		✓			✓	✓			✓	✓
CS	15	20 ✓												
HS	16	10 ✓		✓		✓								
WS	17	10 ✓						✓				✓		
ZS,HS	18	Sfc ✓		✓		✓	✓		✓	✓			✓	✓
WS	19	Sfc ✓						✓				✓		
	20	Sfc ✓												
CS	21	Sfc ✓												
	22	—												
	23	—												
	24	—												
	Sam pler													

Sampling depths – Fixed: Sfc, 10, 20, ²⁵30, 40, 60, 80, 100, ¹¹⁰120, 180, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A7 CTD cast #: 098 Transect #: 37
 Start time (UTC): 18:42 End time (UTC): 18:55 Bottom Depth: 103
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
WS, HS	1	93 ✓		✓				✓				✓		
	2	80 ✓												
WS, HS	3	80 ✓		✓				✓				✓		
	4	60 ✓												
WS, HS	5	60 ✓		✓				✓				✓		
HS	6	40 ✓		✓		✓								
WS	7	40 ✓						✓				✓		
HS WS	8	28 ✓		✓		✓			✓	✓			✓	✓
WS	9	28 ✓						✓				✓		
CS	10	28 ✓												
WS	11	20 ✓						✓				✓		
HS	12	20 ✓		✓		✓								
CS	13	20 ✓												
HS	14	10 ✓		✓		✓								
WS	15	10 ✓						✓				✓		
HS, ZS	16	Sfc ✓		✓		✓	✓			✓	✓		✓	✓
WS	17	Sfc ✓						✓				✓		
	18	Sfc ✓												
CS	19	Sfc ✓												
	20	—												
	21	—												
	22	—												
	23	—												
	24	—												
	Sam pler													

Chl max 93
Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A6 CTD cast #: 099 Transect #: 37
 Start time (UTC): 20:00 End time (UTC): 20:14 Bottom Depth: 90
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
WS, HS	1	78 ✓		✓				✓				✓		
	2	78 ✓												
WS, HS	3	60 ✓		✓				✓				✓		
HS	4	60 ✓				✓								
WS	5	40 ✓						✓				✓		
HS	6	40 ✓		✓		✓	✓		✓	✓			✓	
WS	7	35 ✓						✓				✓		
HS	8	35 ✓		✓		✓	✓		✓	✓			✓	✓
CS	9	35 ✓												
CS	10	35 ✓												
WS	11	30 ✓						✓				✓		
HS	12	30 ✓		✓		✓	✓		✓	✓			✓	✓
WS	13	19 ✓						✓				✓		
HS	14	19 ✓		✓		✓	✓		✓	✓			✓	✓
CS	15	19 ✓												
CS	16	19 ✓												
WS	17	10 ✓						✓				✓		
HS	18	10 ✓		✓		✓	✓		✓	✓			✓	✓
ZS, HS WS	19	Sfc ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
	20	Sfc ✓												
CS	21	Sfc ✓												
CS	22	Sfc ✓												
	23	—												
	24	—												
	Sampler	—												

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 101 Transect #: 42
 Start time (UTC): 20:23 End time (UTC): 21:04 Bottom Depth: ~478
 Start date (UTC): 2019/07/15 End date (UTC): 2019/07/15 Initials: HO

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
HS, WS	6	100 ✓		✓				✓				✓		
HS, WS	7	80 ✓		✓				✓				✓		
CS	8	55 ✓												
CS, HS	9	55 ✓		✓		✓							✓	✓
WS	10	55 ✓												
WS	11	45 ✓												
HS	12	45 ✓		✓		✓							✓	✓
JT	13	28 ✓												
WS	14	28 ✓												
CS	15	28 ✓												
CS, HS	16	28 ✓		✓		✓			✓	✓			✓	✓
JT	17	28 ✓												
HS	18	20 ✓		✓		✓								
WS	19	20 ✓												
WS, HS	20	10 ✓		✓		✓								
CS	21	Surf												
CS	22	↓												
WS	23	↓												
WS, HS	24	↓		✓		✓	✓		✓	✓			✓	✓
	Sam pler													

Sampling depths – Fixed: Sfc, 10, ~~20~~, ~~30~~, ~~40~~, ~~60~~, 80, 100, 120, 150, 200, 250, 300 ✓
Floating: Chl max, 10mab

0
0
0
0
 26 28 45 55
 26 28 45
 28 55

GRABING

TN-368 CTD Cast Sheet

Station Number: A13
Start time (UTC): 22:16
Start date (UTC): 2019/07/15

CTD cast #: 102
End time (UTC): 22:25
End date (UTC): 2019/07/15

Transect #: 42
Bottom Depth: 474
Initials: HD

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
	1	28												
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	9													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													
	21													
	22													
	23													
	24													
	Sampler													

Sampling depths - Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
Floating: Chl max, 10mab

Notes: I turned off data acquisition after filling bottles. NO JPCAST

TN-368 CTD Cast Sheet

Station Number: A18 CTD cast #: 103 Transect #: 44
 Start time (UTC): 00:40 End time (UTC): 01:24 Bottom Depth: 2278
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: W2

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300		✓										
HS	2	250		✓										
HS	3	200		✓										
HS	4	150		✓										
HS	5	120		✓										
HS, WS	6	100		✓				✓				✓		
WS	7	80		✓				✓				✓		
HS	8	80				✓	✓		✓	✓			✓	✓
WS	9	52		✓				✓				✓		
CS, HS	10	52				✓	✓		✓	✓			✓	✓
CS	11	52												
CS, HS	12	40		✓		✓	✓		✓	✓			✓	✓
CS	13	40												
WS	14	40						✓				✓		
WS	15	30						✓				✓		
HS	16	30		✓		✓	✓		✓	✓			✓	✓
WS	17	20						✓				✓		
HS	18	20		✓		✓	✓		✓	✓			✓	✓
WS	19	10						✓				✓		
HS	20	10		✓		✓								
CS	21	sfc												
CS	22	sfc												
WS	23	sfc						✓				✓		
CS, HS	24	sfc		✓		✓	✓		✓	✓			✓	✓
	Sam pler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

CS 0 10 20 30 40 52 80
 CS 0 40 52
 0 40 52

TN-368 CTD Cast Sheet

Station Number: A17 CTD cast #: 104 Transect #: 44
 Start time (UTC): 02:15 End time (UTC): 02:35 Bottom Depth: 219
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: W2

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300		✓										
HS	2	250		✓										
HS	3	200		✓										
HS	4	150		✓										
HS	5	120		✓										
	6	100												
WS, HS	7	80		✓				✓				✓		
HS	8	80		✓		✓								✓
WS, Chl max	9	53						✓				✓		
HS	10	53		✓		✓			✓	✓			✓	✓
WS	11	53						✓				✓		
HS	12	40		✓		✓								
WS	13	40						✓				✓		
HS	14	30		✓		✓								
WS	15	30						✓				✓		
HS	16	20		✓		✓								
WS	17	20						✓				✓		
HS	18	10		✓		✓								
WS	19	10						✓				✓		
	20	sfc												
	21	sfc												
	22	sfc												
	23	sfc												
WS, HS	24	sfc		✓		✓	✓		✓	✓		✓	✓	✓
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

000
 00
 10
 20
 30
 40
 53
 53
 80

TN-368 CTD Cast Sheet

Station Number: A16 CTD cast #: 105 Transect #: 44
 Start time (UTC): 03:19:00 End time (UTC): 04:00:00 Bottom Depth: 1823
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: Carbo Xiao

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300		✓										
HS	2	250		✓										
HS	3	200		✓										
HS	4	150		✓										
HS	5	120		✓										
WS, HS	6	100		✓				✓				✓		
WS	7	80						✓				✓		
HS	8	80		✓		✓								✓
WS	9	51						✓				✓		
HS	10	51		✓		✓			✓	✓			✓	✓
	11	51												
HS	12	40		✓		✓								
WS	13	40						✓				✓		
HS	14	30		✓		✓								
WS	15	30						✓				✓		
HS	16	20		✓		✓								
WS	17	20						✓				✓		
HS	18	10		✓		✓								
WS	19	10						✓				✓		
	20	sfc												
	21													
	22													
WS	23							✓				✓		
WS, HS	24			✓		✓	✓		✓	✓			✓	✓
	Sampler													

Sampling depths – Fixed: sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

0000
 10 20 30 40 51 80
 51
 51
 14
 20

TN-368 CTD Cast Sheet

Station Number: A15 CTD cast #: 106 Transect #: 44
 Start time (UTC): 04:41 End time (UTC): 05:15 Bottom Depth: 1119
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: RS

Floater ID	Bottle	Target Depth	TOI	Nuts	14C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
WS, HS	6	100 ✓		✓				✓			✓	✓		
WS	7	100 ✓												
WS, HS	8	80 ✓		✓		✓		✓			✓	✓		
WS	9	80 ✓												
WS, HS	10	60 ✓		✓		✓		✓			✓	✓	✓	✓
WS	11	60 ✓												
WS, HS	12	49 ✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
WS	13	49 ✓												
WS, HS	14	40 ✓		✓		✓		✓			✓	✓		
WS	15	40 ✓												
WS, HS	16	30 ✓		✓		✓		✓			✓	✓		
WS	17	30 ✓												
WS, HS	18	20 ✓		✓		✓		✓				✓		
WS	19	20 ✓												
WS	20	10 ✓		✓				✓				✓		
	21	Sfc ✓												
	22	Sfc ✓												
WS, HS	23	Sfc ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS, WS	24	Sfc ✓												
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A14 CTD cast #: 107 Transect #: 44
 Start time (UTC): 05:58 End time (UTC): 06:31 Bottom Depth: 687
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: CS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
WS, HS	6	100 ✓		✓				✓				✓		
	7	100 ✓												
WS, HS	8	80 ✓		✓		✓		✓				✓		
	9	80 ✓												
WS, HS	10	60 ✓		✓		✓		✓				✓	✓	✓
	11	60 ✓												
WS, HS	12	43 ✓		✓		✓		✓	✓	✓		✓	✓	✓
	13	43 ✓												
WS, HS	14	30 ✓		✓		✓		✓				✓		
	15	30 ✓												
WS, HS	16	20 ✓		✓		✓		✓				✓		
	17	20 ✓												
WS, HS	18	10 ✓		✓		✓		✓				✓		
	19	10 ✓												
	20	Sfc ✓												
	21	Sfc ✓												
	22	Sfc ✓												
ZS, WS, HS	23	Sfc ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
	24	Sfc ✓												
	Sampler													

43

Sampling depths – Fixed: Sfc, 10, 20, 30, ~~40~~, 60, 80, 100, 120, 150, 200, 250, 300
Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 108 Transect #: 44
 Start time (UTC): 07:19 End time (UTC): 07:52 Bottom Depth: 471
 Start date (UTC): 2019-07-14 End date (UTC): 2019-07-14 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
HS	6	100 ✓		✓				✓				✓		
WS, HS	7	80 ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS	8	80 ✓												
WS, HS	9	68 ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS, HS	10	60 ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS	11	60 ✓												
WS, HS	12	40 ✓		✓		✓		✓				✓		
WS	13	40 ✓												
WS, HS	14	30 ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS	15	30 ✓												
	16	30 ✓												
WS, HS	17	20 ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
WS	18	20 ✓												
WS, HS	19	10 ✓		✓		✓		✓				✓		
WS	20	10 ✓												
	21	sfc ✓												
	22	sfc ✓												
WS, HS	23	sfc ✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
ZS, WS	24	sfc ✓												
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A12 CTD cast #: 109 Transect #: 44
 Start time (UTC): 8:40 End time (UTC): 9:06 Bottom Depth: ~274
 Start date (UTC): 2019/07/16 End date (UTC): 2019/07/16 Initials: HT

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS 10mab	1	263 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
HS, WS	6	100 ✓		✓								✓		
WS	7	100 ✓												
HS, WS	8	80 ✓		✓								✓		
	9	80 ✓												
WS, HS	10	60 ✓		✓		✓						✓		
WS	11	60 ✓												
WS, HS	12	40 ✓		✓		✓						✓	✓	✓
	13	40 ✓												
WS, HS	14	30 ✓		✓		✓			✓	✓		✓	✓	✓
WS	15	30 ✓												
WS, HS	16	20 ✓		✓		✓						✓	✓	✓
WS	17	20 ✓												
WS	18	10 ✓		✓								✓		
	19	10 ✓												
	20	S&C												
	21	S&C												
	22	S&C												
WS, HS	23	S&C ✓		✓		✓	✓		✓	✓		✓	✓	✓
WS, WS	24	S&C ✓												
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

26 ✓

PRODUCTIVITY

TN-368 CTD Cast Sheet

Station Number: A11 CTD cast #: 110 Transect #: 44
 Start time (UTC): 9:59 End time (UTC): 10:22 Bottom Depth: ~150
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: HO

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS 10 mab	1	140		✓										
HS	2	120		✓										
WS, HS	3	100		✓	✓							✓		
WS, HS	4	80		✓	✓							✓		
WS, HS	5	60		✓	✓	✓						✓		
WS, HS	6	47		✓	✓	✓						✓		
WS, HS	7	40		✓	✓	✓						✓	✓	✓
	8	40												
WS, HS	9	31		✓	✓	✓			✓	✓		✓	✓	✓
CS	10	31												
CS	11	31												
	12	31												
WS, HS	13	20		✓	✓	✓						✓		
CS	14	20												
CS	15	20												
	16	20												
WS, HS	17	13		✓	✓	✓						✓		
WS, HS	18	9		✓	✓	✓						✓		
WS	19	5		✓	✓							✓		
	20	0												
CS	21	0												
CS	22	0												
ZS, WS, HS	23	0		✓	✓	✓	✓		✓	✓		✓	✓	✓
	24	0												
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
Floating: Chl max, 10mab
 0 5 9 13 20 31 40 47 60 80 100 120 140
 0 20 31 40
 0 20 31
 0 20 31

TN-368 CTD Cast Sheet

Station Number: A10 CTD cast #: 111 Transect #: 44
 Start time (UTC): 11:42 End time (UTC): 11:29 Bottom Depth: ~137
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: HO/WZ

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS 10mab	1	127		✓										
HS	2	120		✓										
HS, WS	3	100		✓								✓		
	4	100												
HS, WS	5	80		✓								✓		
	6	80												
HS, WS	7	60		✓								✓		
	8	60												
HS, WS	9	40		✓		✓						✓		
	10	40												
HS, WS Chl max	11	30		✓		✓			✓	✓		✓	✓	✓
	12	30												
	13	30												
HS, WS	14	20		✓		✓						✓		
	15	20												
HS, WS	16	10		✓		✓						✓		
	17	10												
HS, WS ZS	18	sfc		✓		✓	✓		✓	✓		✓	✓	✓
	19	sfc												
	20	sfc												
	21													
	22													
	23													
	24													
	Sam pler													

Sampling depths – Fixed: Sfc, 10', 20', 30', 40', 60', 80', 100', 120', 150', 200', 250', 300'
Floating: Chl max, 10mab 0' 10' 20' 30' 40' 60' 80' 100' 127'

~ 8 m vertical displacement of chlmax (from -26m to -34m) from downcast to upcast. The displacement is presumably caused by IWs and affects optics in the TN-368 CTD Cast Sheet water column. Productivity sampling is postponed to the next cast at the sample location.

Station Number: A9 CTD cast #: 112 Transect #: 14
 Start time (UTC): 12:20 End time (UTC): 12:14 Bottom Depth: 129
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: WZ

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	10mab	119		✓										
	HS, WS	2		✓										
	WS	3												
	HS, WS	4		✓										
		5												
	HS, WS	6		✓										
		7												
	HS, WS	8		✓		✓								
	WS	9												
WS, HS	Chlmax	10		✓		✓			✓	✓			✓	✓
	WS	11												
		12												
	WS, HS	13		✓		✓							✓	✓
		14												
	WS, HS	15		✓		✓								
	WS	16												
	WS, HS	17		✓		✓								
		18												
	WS, HS	19		✓		✓	✓		✓	✓			✓	✓
	WS, WS	20												
		21												
		22												
		23												
		24												
	Sampler													

Sampling depths - Fixed: ~~Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300~~

Floating: Chl max, 10mab
 0, 6, 12, 17, 27, 41, 60, 80, 100, 119
 0, 6, 12, 17, 27, 41, 60, 80, 100
 0, 0, 0
 27

Same location as the last cast, but for productivity sampling.
 The comparison between this and the last casts can shed light on the influence of TN-368 CTD Cast Sheet IWs on water column optics.

Station Number: A9 CTD cast #: 113 Transect #: 44
 Start time (UTC): 12:15 End time (UTC): 13:45 Bottom Depth: 129
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: WZ

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	119		✓										
HS, WS	2	100		✓	✓							✓		
	3	100												
HS, WS	4	80		✓	✓							✓		
	5	80												
HS, WS	6	64		✓	✓	✓						✓		
	7	64												
HS, WS	8	43		✓	✓	✓	✓		✓	✓		✓	✓	✓
	9	43												
WS, HS Chl max	10	28		✓	✓	✓	✓		✓	✓		✓	✓	✓
	11	28												
	12	28												
HS	13	22		✓		✓							✓	✓
HS, WS	14	18		✓	✓	✓	✓		✓	✓		✓	✓	✓
	15	18												
HS, WS	16	13		✓	✓	✓	✓		✓	✓		✓	✓	✓
	17	13												
HS, WS	18	6		✓	✓							✓		
	19	6												
	20	sfc												
	21	sfc												
	22	sfc												
WS, HS	23	sfc		✓	✓	✓	✓		✓	✓		✓	✓	✓
	24													
	Sam pler													

Sampling depths - Fixed: ~~Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300~~

Floating: Chl max, 10mab

0 6' 13' 18' 28' 43' 64' 80' 100' 119'
 0 6' 13' 18' 28' 43' 64' 80' 100'
 0 28'

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 114 Transect #: 47
 Start time (UTC): 16:33 End time (UTC): 17:05 Bottom Depth: 478
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
WS, HS	6	100 ✓		✓		✓						✓		
WS, HS	7	80 ✓		✓		✓						✓		
JT	8	56 ✓												
JT	9	56 ✓												
CS	10	56 ✓												
CS, HS	11	56 ✓		✓		✓			✓	✓			✓	✓
WS	12	56 ✓										✓		
WS	13	40 ✓										✓		
HS	14	40 ✓		✓		✓								
WS	15	30 ✓										✓		
HS	16	30 ✓		✓		✓								
CS	17	20 ✓										✓		
CS, HS	18	20 ✓		✓		✓			✓	✓			✓	✓
WS	19	20 ✓												
HS, WS	20	10 ✓		✓		✓						✓		
CS	21	Sfc ✓												
CS	22	Sfc ✓												
WS	23	Sfc ✓										✓		
CS, HS	24	Sfc ✓		✓		✓	✓		✓	✓			✓	✓
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, ^{Chl max 50'} 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

grazes

TN-368 CTD Cast Sheet

Station Number: A13 CTD cast #: 115 Transect #: 47
Start time (UTC): 18:14 End time (UTC): 19:22 Bottom Depth: 481
Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
	1	56												
	2													
	3													
	4													
	5													
	6											✓		
	7											✓		
	8													
	9													
	10													
	11													
	12											✓		
	13											✓		
	14													
	15											✓		
	16													
	17											✓		
	18													
	19													
	20													
	21											✓		
	22													
	23											✓		
	24	✓												
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: ALFI CTD cast #: 116 Transect #: 47
 Start time (UTC): 18:53 End time (UTC): 19:24 Bottom Depth: 490
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: ZS

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
	6	100 ✓												
WS, HS	7	100 ✓		✓								✓		
HS	8	80 ✓		✓		✓								
WS	9	80 ✓										✓		
HS	10	60 ✓		✓		✓								
WS	11	60 ✓										✓		
HS	12	35 ✓		✓		✓			✓	✓			✓	✓
WS	13	35 ✓										✓		
HS	14	29 ✓		✓		✓								
WS	15	29 ✓										✓		
HS	16	22 ✓		✓		✓			✓	✓			✓	✓
WS	17	22 ✓										✓		
HS	18	10 ✓		✓		✓								
WS	19	10 ✓										✓		
	20	Sfc ✓												
	21	Sfc ✓												
	22	Sfc ✓												
WS	23	Sfc ✓										✓		
ZS, HS	24	Sfc ✓		✓		✓	✓		✓	✓			✓	✓
	Sam pler													

Sampling depths – Fixed: Sfc, 10, ²²20, 30, ³⁵40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: ALFZ
 Start time (UTC): 19:57
 Start date (UTC): 2019-07-16

CTD cast #: 117
 End time (UTC): 20:26
 End date (UTC): 2019-07-16

Transect #: 47
 Bottom Depth: 395
 Initials: ZS/HO

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSI	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
	6	100 ✓												
WS, HS	7	100 ✓		✓								✓		
HS	8	80 ✓		✓		✓								
WS	9	80 ✓										✓		
HS	10	60 ✓		✓		✓								
WS	11	60 ✓										✓		
HS	12	40 ✓		✓		✓			✓	✓			✓	✓
WS	13	40 ✓										✓		
HS	14	30 ✓		✓		✓								
WS	15	30 ✓										✓		
HS	16	20 ✓		✓		✓								
WS	17	20 ✓										✓		
HS	18	10 ✓		✓		✓								
WS	19	10 ✓										✓		
	20	Sfc ✓												
	21	Sfc ✓												
	22	Sfc ✓												
WS	23	Sfc ✓										✓		
ZS, HS	24	Sfc ✓		✓		✓	✓		✓	✓			✓	✓
	Sampler													

42

Sampling depths – Fixed: Sfc, 10, 20, 30, ~~40~~⁴², 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

returned to surface at 19m to start archiving data

TN-368 CTD Cast Sheet

Station Number: ALF3 CTD cast #: 118 Transect #: 47
 Start time (UTC): 20:58 End time (UTC): 21:28 Bottom Depth: ~375
 Start date (UTC): 2019-07-16 End date (UTC): 2019-07-16 Initials: HO/WZ

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS	1	300 ✓		✓										
HS	2	250 ✓		✓										
HS	3	200 ✓		✓										
HS	4	150 ✓		✓										
HS	5	120 ✓		✓										
	6	100 ✓												
WS, HS	7	100 ✓		✓								✓		
	8	80 ✓												
WS, HS	9	80 ✓		✓								✓		
HS	10	60 ✓		✓		✓								
WS	11	60 ✓										✓		
HS	12	45 ✓		✓		✓			✓	✓			✓	✓
WS	13	45 ✓										✓		
HS	14	30 ✓		✓		✓								
WS	15	30 ✓										✓		
HS	16	20 ✓		✓		✓								
WS	17	20 ✓										✓		
HS	18	10 ✓		✓		✓								
WS	19	10 ✓										✓		
	20	sfc ✓												
	21	sfc ✓												
	22	sfc ✓												
WS	23	sfc ✓										✓		
ZS, HS	24	sfc ✓		✓		✓	✓		✓	✓			✓	✓
	Sam pler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab

TN-368 CTD Cast Sheet

Station Number: A5 CTD cast #: 119 Transect #: 49
 Start time (UTC): 01:15 End time (UTC): 01:32 Bottom Depth: 83
 Start date (UTC): 2019-07-17 End date (UTC): 2019-07-17 Initials: W2

Floater ID	Bottle	Target Depth	TOI	Nuts	¹⁴ C	Chl a vol	Chl b vol	BSi	HPLC ID	HPLC vol	CO ₂	C/N	FCM	IFCB
HS, WS 10mab	1	72		✓								✓		
	2	72												
WS	3	60										✓		
HS	4	60		✓		✓								
	5	50												
HS	6	50		✓		✓	✓		✓	✓			✓	✓
CS	7	50												
HS	8	40		✓		✓	✓		✓	✓			✓	✓
WS	9	40										✓		
HS 10mab	10	26		✓		✓	✓		✓	✓			✓	✓
WS	11	26										✓		
CS	12	26												
WS	13	20										✓		
HS	14	20		✓		✓	✓		✓	✓			✓	✓
WS	15	10										✓		
HS	16	10		✓		✓	✓		✓	✓			✓	✓
WS	17	Sfc										✓		
ZS, HS	18	Sfc		✓										
CS	19	Sfc												
	20	Sfc												
	21													
	22													
	23													
	24													
	Sampler													

Sampling depths – Fixed: Sfc, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200, 250, 300
 Floating: Chl max, 10mab
 0' 10' 20' 26' 40' 60' 72'
 0' 26' 50' 72'
 0' 26' 50' 50'

