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Technical Note

Clump Point Boat Ramp Development Plan

Metocean Data Collection

1.1 Overview

Metocean data collection was undertaken at Clump Point for the period between 19th July 2016 and 1st August 2016. Measurement of currents, waves and turbidity were taken over this period. Field collection equipment used for this included:

- A seabed mounted 1000kHz Nortek Acoustic Wave and Current Profiler (AWAC) – Deployed 19/7/2016-1/8/2016
- A McVan Analite Turbidity Probe – Deployed 19/7/2016-1/8/2016
- A boat mounted 1000kHz Teledyne RD Acoustic Doppler Current Profiler (ADCP) – Operated 20/7/2016 and 21/7/2016.

The seabed mounted ADCP setup is shown in Figure 1. The location of the boat-mounted transects and bed mounted deployment are shown in Figure 2.

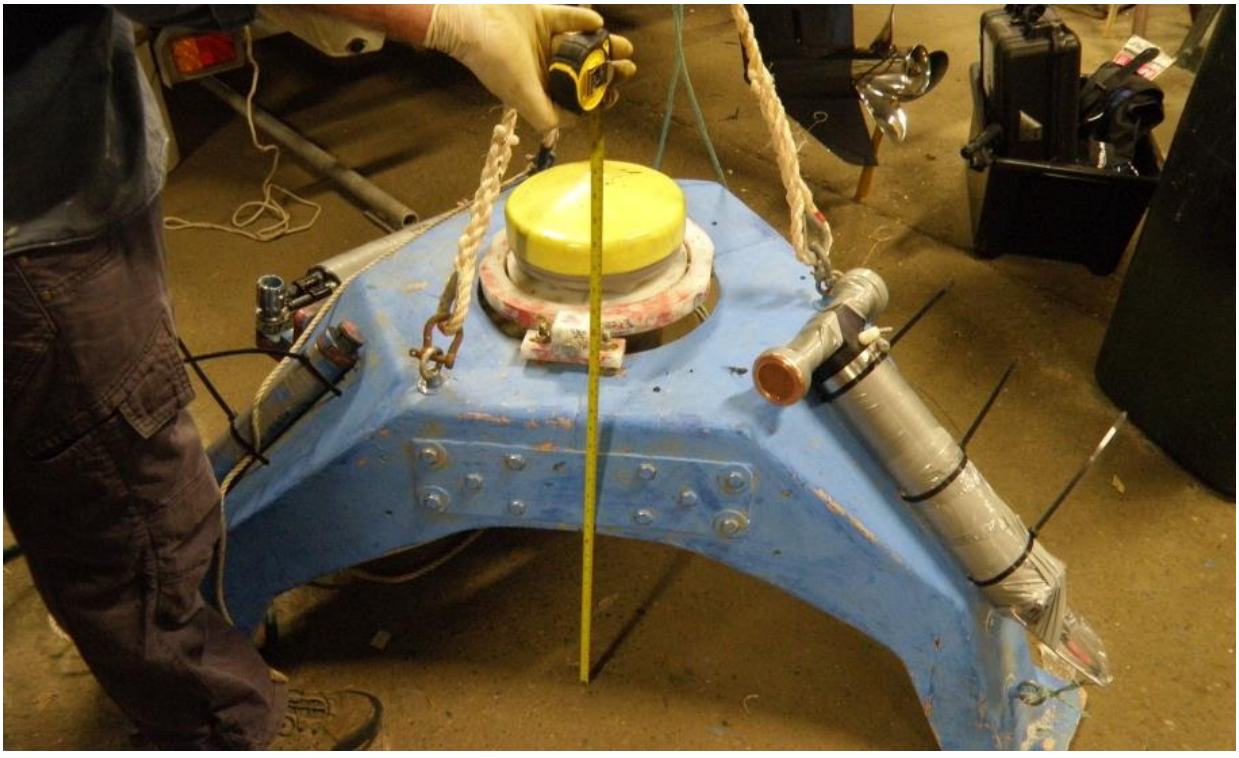

Figure 1 ADCP equipment setup

Transect 1

Transect 2

AWAC

Coral Sea

Clump Point

Boat Bay

(El Arish - Mission Beach Rd)

Alexander Drv

Clump Point Lookout Rd

LEGEND

- AWAC
- Transects

Title:

Metocean Data Collection Locations

Figure: 2

Rev: A

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

N

0m 100 200

Approx. Scale

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Filepath : I:\B22205_I_JLB Clump Point Development Plan SH\DRG\ECO_015_160812_Data Collection Locations.wor

1.2 Weather Conditions

During the length of the deployment conditions were varied with showers observed from the 18th July through to the 21st July and periods of windy conditions. Average wind speeds of 37km/hr were recorded at 9am on both the 18th of July at the Lucinda Point Weather Station (BOM, 2016). Swell associated with the easterly breeze compromised a subset of transect data however quality data was still obtained and is presented below.

Table 1 Bureau of Meteorology weather observations at Lucinda Point

Date	Temps		Rain	9:00 AM Wind		3:00 PM Wind	
	Min (°C)	Max (°C)	mm	Dir (km/h)	Spd (km/h)	Dir (km/h)	Spd (km/h)
18/7	17.6	24.6	15	ENE	37	SSE	9
19/7	22	25.1	1.2	ESE	22	ESE	24
20/7	22.3	24.7	2.8	S	15	SE	20
21/7	21.3	23.6	5.2	S	24	SE	7
22/7	21.7	24.8	0.2	S	19	S	11
23/7	20	25.2	0.2	SW	17	E	13
24/7	19.6	25.7	0	SW	13	ENE	7
25/7	19.3	26.7	0	WSW	13	N	6
26/7	19.5	24.1	0	SW	15	S	15
27/7	20.8	24.6	0	SSE	26	E	9
28/7	21.6	23.2	0.4	S	31	SE	19
29/7	19.2	22.7	0	S	31	S	17
30/7	19.1	23.3	0	S	28	SE	13
31/7	20.7	23.6	0	S	19	SE	15
1/8	20.1	24.4	0	S	15	SE	6
2/8	20	25.5	0.2	SW	15	NE	24

1.3 Bed Mounted AWAC and Turbidity Data

The following plots present the data collected during the deployment of the seabed mounted AWAC. The AWAC was configured to sample the water column velocity every 6 minutes and the wave climate every hour.

Turbidity measurements were also measured at the seabed alongside the AWAC. A measurement of the turbidity was obtained every 12 minutes throughout the deployment.

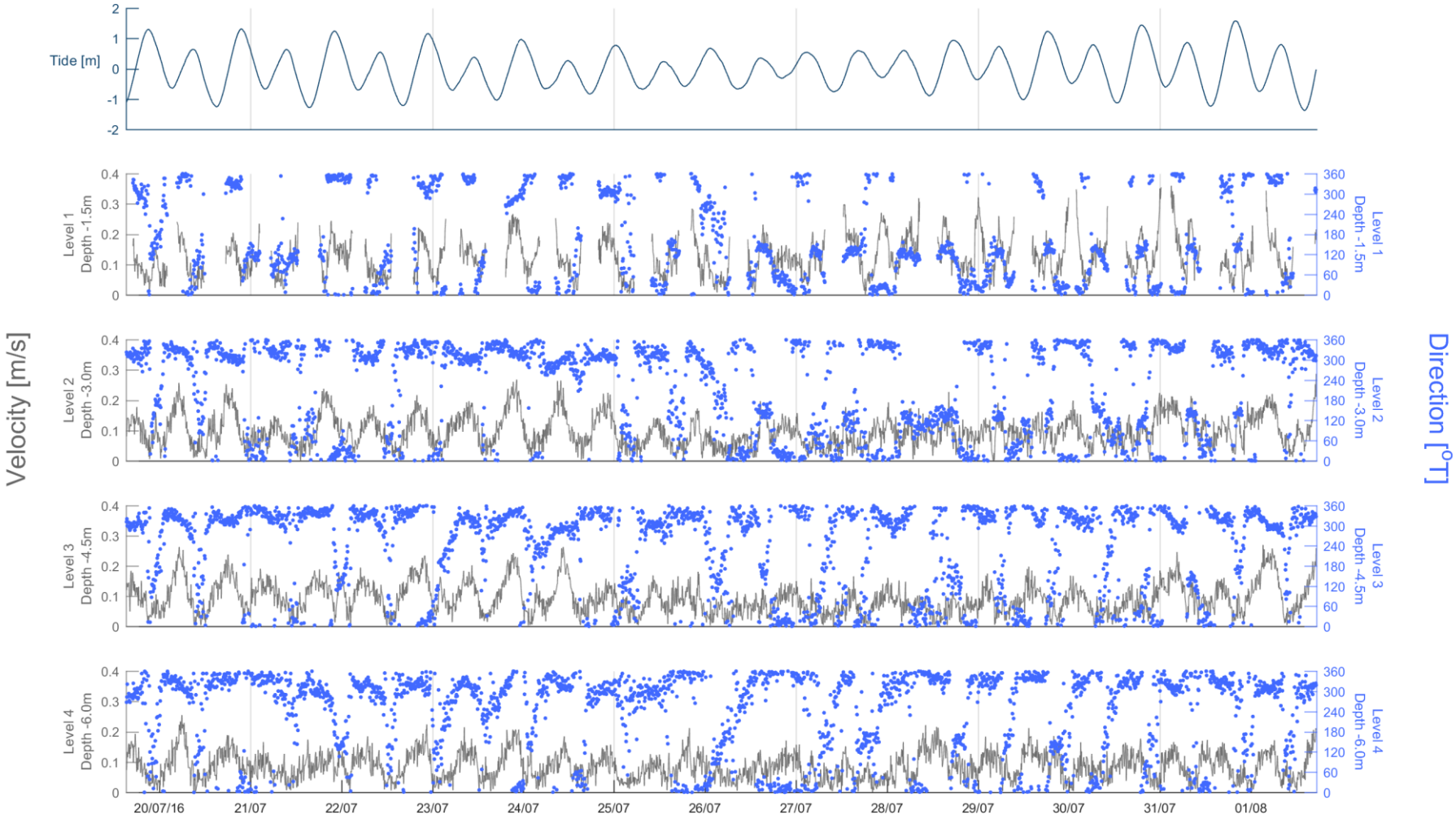


Figure 3 AWAC water level and current measurements

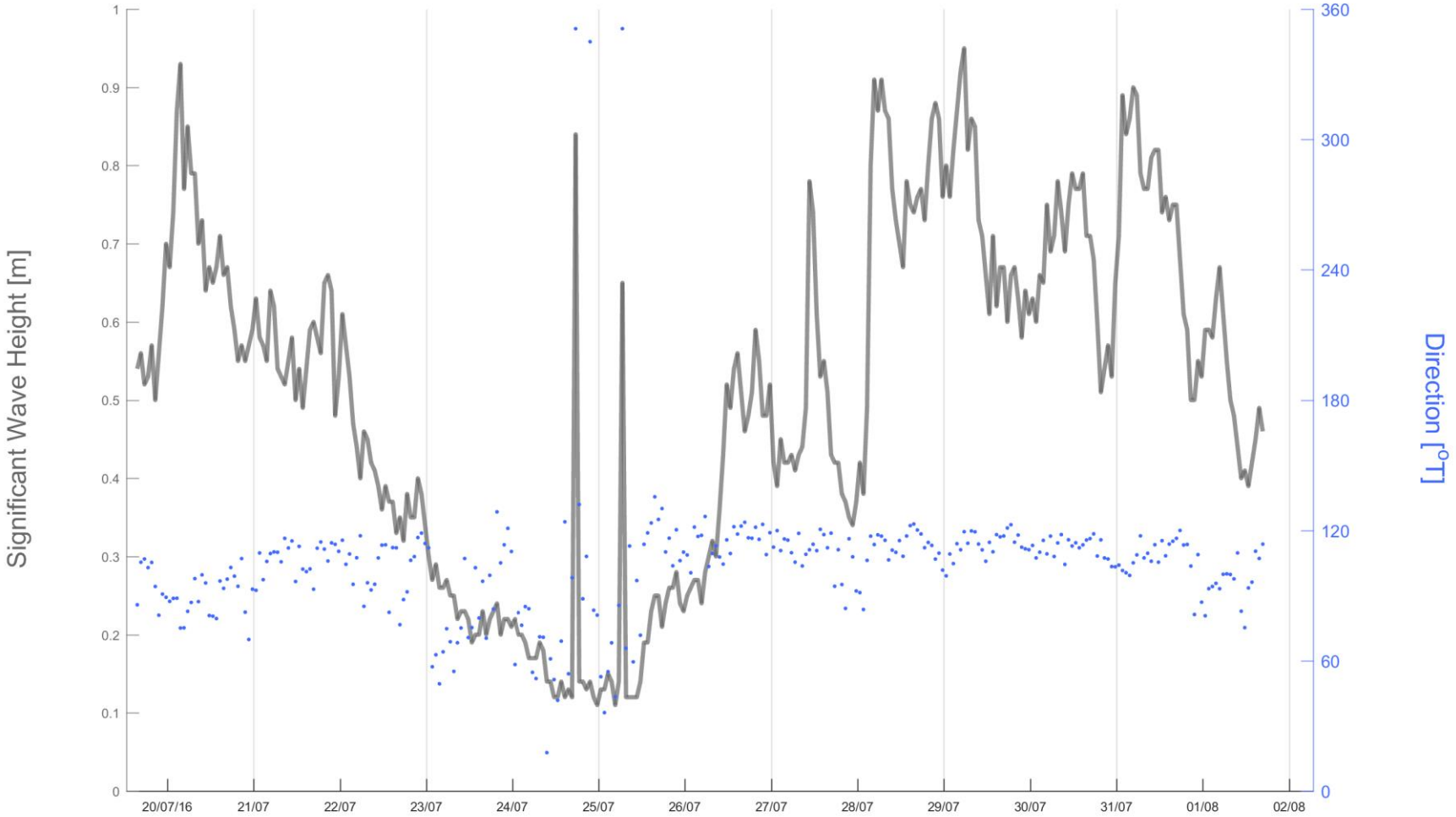


Figure 4 AWAC wave measurements

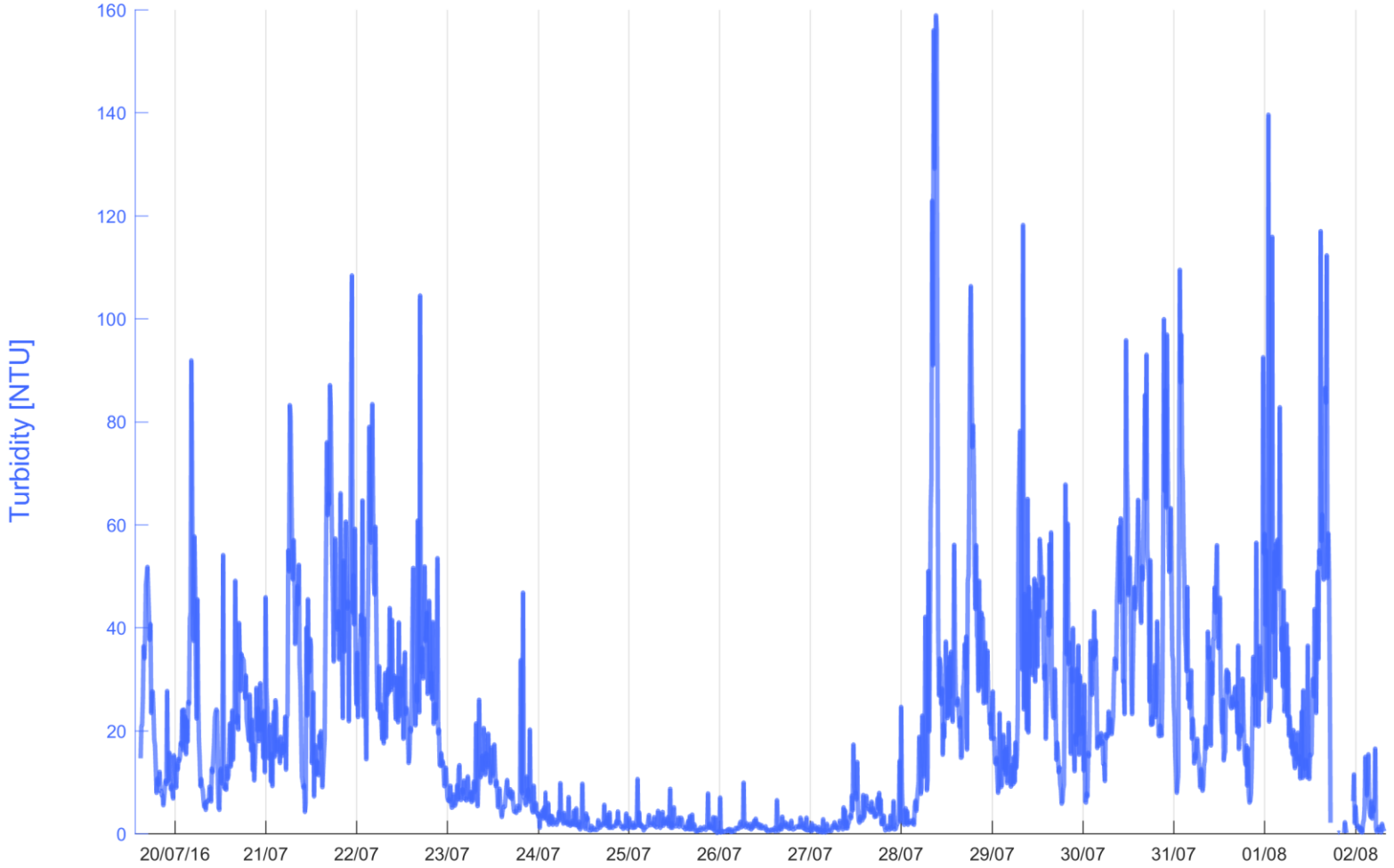


Figure 5 Turbidity measurements

1.4 Boat Mounted ADCP Transect Data

Two transect lines were taken around Clump point to look at the spatial variations in currents (both with respect to location and depth). Due to poor conditions during the first day of sampling some additional transects were taken on the following day.

Table 2 ADCP transect summary

Date	Transect	Start Time	End Time	Start Position	End Position	Sheet
20/7/2016	1	9:10	9:21	146.1160E 17.8531S	146.1086E 17.8463S	Day 1 Transect 000
	2	9:22	9:30	146.1088E 17.8464S	146.1161E 17.8531S	Day 1 Transect 001
	3	9:37	9:46	146.1160E 17.8529S	146.1232E 17.8457S	Day 1 Transect 002
	4	9:58	10:09	146.1231E 17.8460S	146.1161E 17.8531S	Day 1 Transect 003
	5	10:10	10:21	146.1160E 17.8531S	146.1087E 17.8463S	Day 1 Transect 004
	6	10:23	10:32	146.1089E 17.8464S	146.1161E 17.8531S	Day 1 Transect 005
	7	10:37	10:47	146.1160E 17.8531S	146.1233E 17.8456S	Day 1 Transect 006
	8	10:53	11:07	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 007
	9	11:08	11:18	146.1160E 17.8530S	146.1088E 17.8463S	Day 1 Transect 008
	10	11:20	11:31	146.1089E 17.8464S	146.1160E 17.8531S	Day 1 Transect 009
	11	11:32	11:45	146.1159E 17.8531S	146.1231E 17.8458S	Day 1 Transect 010
	12	11:46	11:56	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 011
	13	11:57	12:07	146.1161E 17.8531S	146.1088E 17.8463S	Day 1 Transect 012
	14	12:09	12:20	146.1089E 17.8464S	146.1160E 17.8531S	Day 1 Transect 013
	15	12:21	12:32	146.1161E 17.8530S	146.1232E 17.8458S	Day 1 Transect 014
	16	12:33	12:43	146.1232E 17.8458S	146.1160E 17.8531S	Day 1 Transect 015
	17	12:44	12:54	146.1159E 17.8531S	146.1088E 17.8464S	Day 1 Transect 016
	18	12:55	13:05	146.1089E 17.8464S	146.1160E 17.8531S	Day 1 Transect 017
	19	13:07	13:18	146.1160E 17.8530S	146.1231E 17.8459S	Day 1 Transect 018
	20	13:27	13:37	146.1232E 17.8459S	146.1161E 17.8531S	Day 1 Transect 019
	21	13:38	13:47	146.1160E 17.8531S	146.1088E 17.8463S	Day 1 Transect 020
	22	13:48	13:59	146.1089E 17.8464S	146.1160E 17.8531S	Day 1 Transect 021
	23	13:59	14:12	146.1161E 17.8530S	146.1232E 17.8458S	Day 1 Transect 022
	24	14:14	14:24	146.1231E 17.8458S	146.1161E 17.8531S	Day 1 Transect 023
	25	14:25	14:34	146.1160E 17.8531S	146.1088E 17.8463S	Day 1 Transect 024
	26	14:35	14:48	146.1088E 17.8464S	146.1160E 17.8531S	Day 1 Transect 025
	27	15:02	15:15	146.1160E 17.8530S	146.1232E 17.8457S	Day 1 Transect 026
	28	15:21	15:31	146.1230E 17.8459S	146.1160E 17.8531S	Day 1 Transect 027
	29	15:32	15:42	146.1159E 17.8531S	146.1088E 17.8463S	Day 1 Transect 028
	30	15:43	15:53	146.1089E 17.8464S	146.1160E 17.8531S	Day 1 Transect 029
	31	16:19	16:32	146.1160E 17.8531S	146.1231E 17.8458S	Day 1 Transect 030
	32	16:33	16:43	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 031
	33	16:44	16:54	146.1160E 17.8531S	146.1088E 17.8463S	Day 1 Transect 032
	34	16:55	17:07	146.1089E 17.8463S	146.1160E 17.8531S	Day 1 Transect 033

Date	Transect	Start Time	End Time	Start Position	End Position	Sheet
	35	17:08	17:21	146.1160E 17.8531S	146.1231E 17.8458S	Day 1 Transect 034
	36	17:30	17:39	146.1230E 17.8459S	146.1160E 17.8531S	Day 1 Transect 035
	37	17:40	17:49	146.1160E 17.8531S	146.1088E 17.8463S	Day 1 Transect 036
	38	17:50	18:01	146.1086E 17.8462S	146.1161E 17.8531S	Day 1 Transect 037
	39	18:01	18:13	146.1160E 17.8531S	146.1233E 17.8458S	Day 1 Transect 038
	40	18:14	18:24	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 039
	41	18:25	18:34	146.1161E 17.8530S	146.1087E 17.8463S	Day 1 Transect 040
	42	18:35	18:45	146.1089E 17.8464S	146.1160E 17.8530S	Day 1 Transect 041
	43	18:46	18:56	146.1161E 17.8530S	146.1232E 17.8458S	Day 1 Transect 042
	44	18:57	19:06	146.1230E 17.8459S	146.1160E 17.8531S	Day 1 Transect 043
	45	19:07	19:19	146.1160E 17.8531S	146.1089E 17.8464S	Day 1 Transect 044
	46	19:20	19:30	146.1089E 17.8465S	146.1161E 17.8531S	Day 1 Transect 045
	47	19:32	19:45	146.1160E 17.8531S	146.1232E 17.8458S	Day 1 Transect 046
	48	19:46	19:56	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 047
	49	20:34	20:44	146.1160E 17.8531S	146.1232E 17.8457S	Day 1 Transect 048
	50	20:45	20:55	146.1231E 17.8459S	146.1160E 17.8531S	Day 1 Transect 049
	51	20:56	21:05	146.1160E 17.8531S	146.1087E 17.8463S	Day 1 Transect 050
	52	21:06	21:16	146.1089E 17.8464S	146.1161E 17.8531S	Day 1 Transect 051
	53	21:19	21:28	146.1160E 17.8531S	146.1231E 17.8457S	Day 1 Transect 052
	54	21:29	21:38	146.1232E 17.8460S	146.1160E 17.8531S	Day 1 Transect 053
21/7/2016	1	11:23	11:35	146.1160E 17.8530S	146.1232E 17.8458S	Day 2 Transect 000
	2	11:36	11:47	146.1231E 17.8459S	146.1160E 17.8531S	Day 2 Transect 001
	3	11:48	11:57	146.1160E 17.8531S	146.1088E 17.8463S	Day 2 Transect 002
	4	11:59	12:10	146.1089E 17.8464S	146.1160E 17.8531S	Day 2 Transect 003
	5	12:12	12:23	146.1160E 17.8530S	146.1232E 17.8458S	Day 2 Transect 004
	6	12:24	12:34	146.1231E 17.8459S	146.1160E 17.8530S	Day 2 Transect 005
	7	12:35	12:46	146.1160E 17.8530S	146.1089E 17.8464S	Day 2 Transect 006
	8	12:47	12:59	146.1089E 17.8464S	146.1160E 17.8531S	Day 2 Transect 007

Table 3 ADCP transect average currents – 20/07/2016

Transect Number	Time	Average Current Speed [m/s]	Average Current Direction [°T]
1	20/07/2016 9:15	0.03	286
2	20/07/2016 9:26	0.01	43
3	20/07/2016 9:41	0.04	337
4	20/07/2016 10:04	0.04	333
5	20/07/2016 10:15	0.04	313
6	20/07/2016 10:28	0.03	337
7	20/07/2016 10:42	0.07	331
8	20/07/2016 11:00	0.06	323
9	20/07/2016 11:13	0.04	314
10	20/07/2016 11:26	0.02	8
11	20/07/2016 11:38	0.05	314
12	20/07/2016 11:51	0.03	321
13	20/07/2016 12:02	0.01	297
14	20/07/2016 12:15	0.03	100
15	20/07/2016 12:26	0.01	70
16	20/07/2016 12:38	0.03	127
17	20/07/2016 12:49	0.01	161
18	20/07/2016 13:01	0.04	111
19	20/07/2016 13:12	0.05	126
20	20/07/2016 13:32	0.07	127
21	20/07/2016 13:42	0.03	146
22	20/07/2016 13:54	0.06	111
23	20/07/2016 14:06	0.06	120
24	20/07/2016 14:19	0.08	130
25	20/07/2016 14:29	0.04	149
26	20/07/2016 14:42	0.06	124
27	20/07/2016 15:09	0.08	123
28	20/07/2016 15:26	0.09	130
29	20/07/2016 15:37	0.06	157
30	20/07/2016 15:48	0.06	135
31	20/07/2016 16:25	0.11	131
32	20/07/2016 16:38	0.14	136
33	20/07/2016 16:49	0.07	158
34	20/07/2016 17:01	0.07	140
35	20/07/2016 17:14	0.13	139
36	20/07/2016 17:34	0.16	139
37	20/07/2016 17:45	0.08	155
38	20/07/2016 17:55	0.09	146
39	20/07/2016 18:07	0.15	140

Transect Number	Time	Average Current Speed [m/s]	Average Current Direction [°T]
40	20/07/2016 18:19	0.16	141
41	20/07/2016 18:29	0.08	160
42	20/07/2016 18:40	0.09	149
43	20/07/2016 18:51	0.14	138
44	20/07/2016 19:02	0.16	142
45	20/07/2016 19:13	0.1	158
46	20/07/2016 19:25	0.1	146
47	20/07/2016 19:38	0.12	139
48	20/07/2016 19:52	0.12	140
49	20/07/2016 20:39	0.07	132
50	20/07/2016 20:50	0.08	139
51	20/07/2016 21:00	0.06	158
52	20/07/2016 21:11	0.06	141
53	20/07/2016 21:23	0.04	93
54	20/07/2016 21:34	0.04	107

Table 4 ADCP transect average currents – 21/07/2016

Transect Number	Time	Average Current Speed [m/s]	Average Current Direction [°T]
1	21/07/2016 11:29	0.06	336
2	21/07/2016 11:41	0.04	331
3	21/07/2016 11:52	0.02	328
4	21/07/2016 12:04	0.02	61
5	21/07/2016 12:17	0.04	329
6	21/07/2016 12:29	0.02	289
7	21/07/2016 12:40	0.01	76
8	21/07/2016 12:53	0.03	89

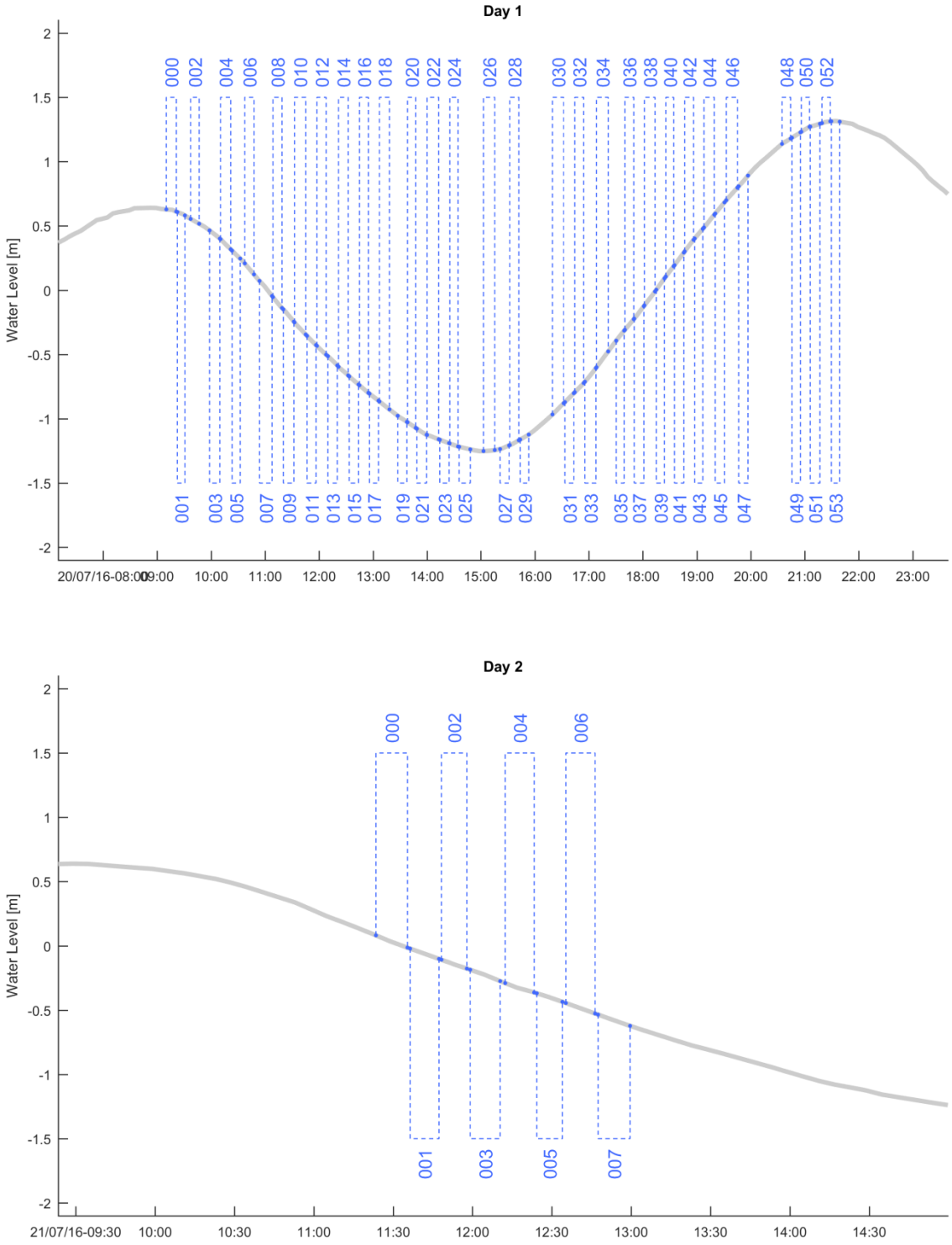
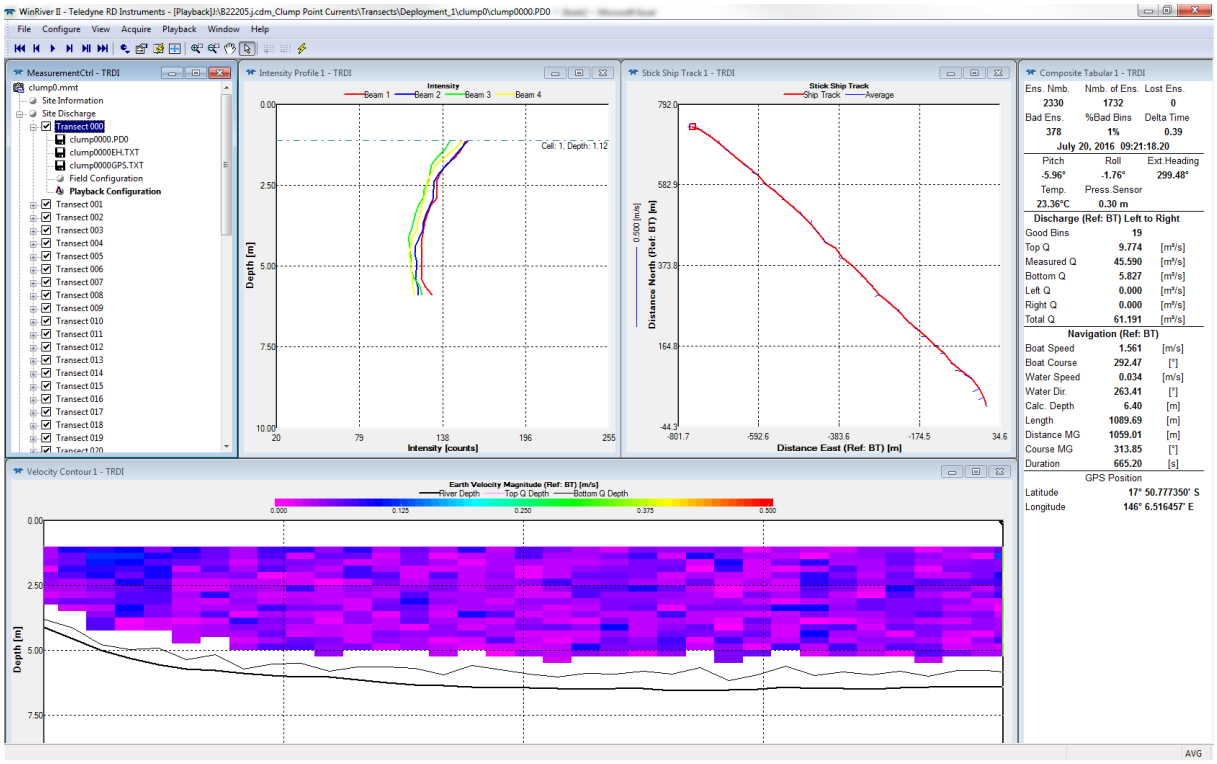
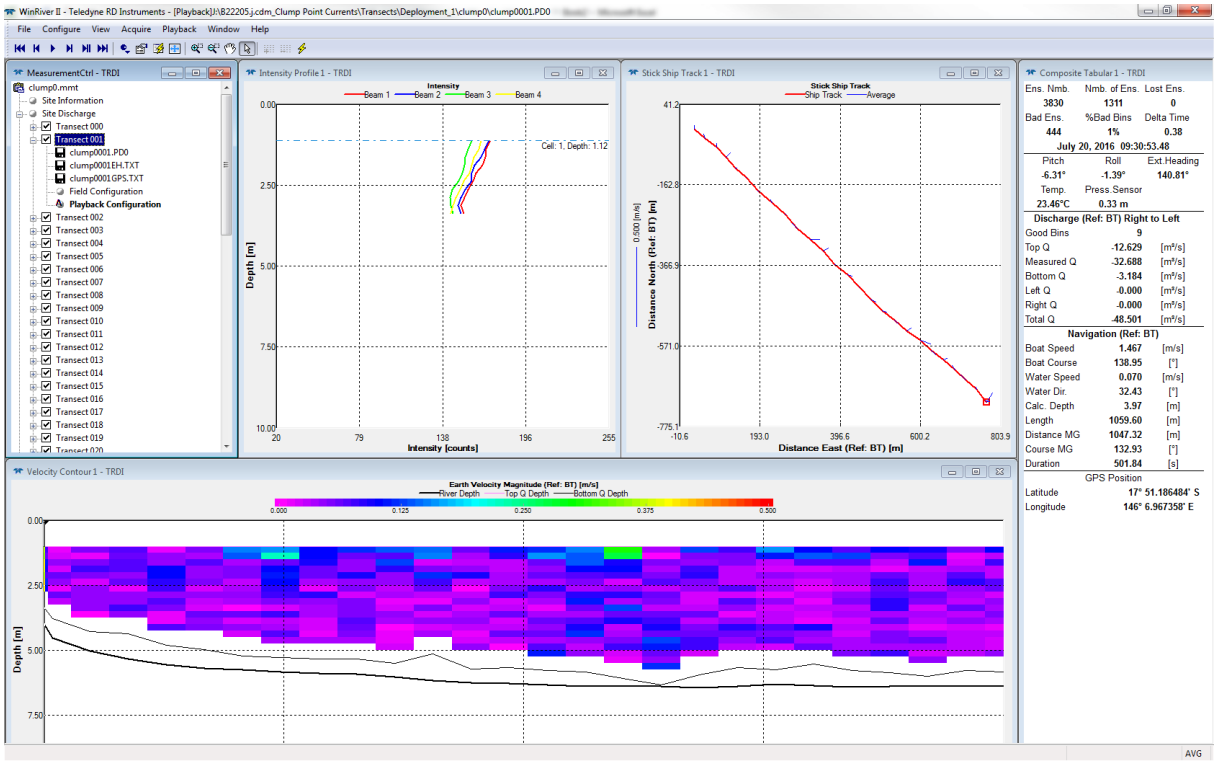


Figure 6 Transect timing relative to the tidal stage



Day 1 Transect 000



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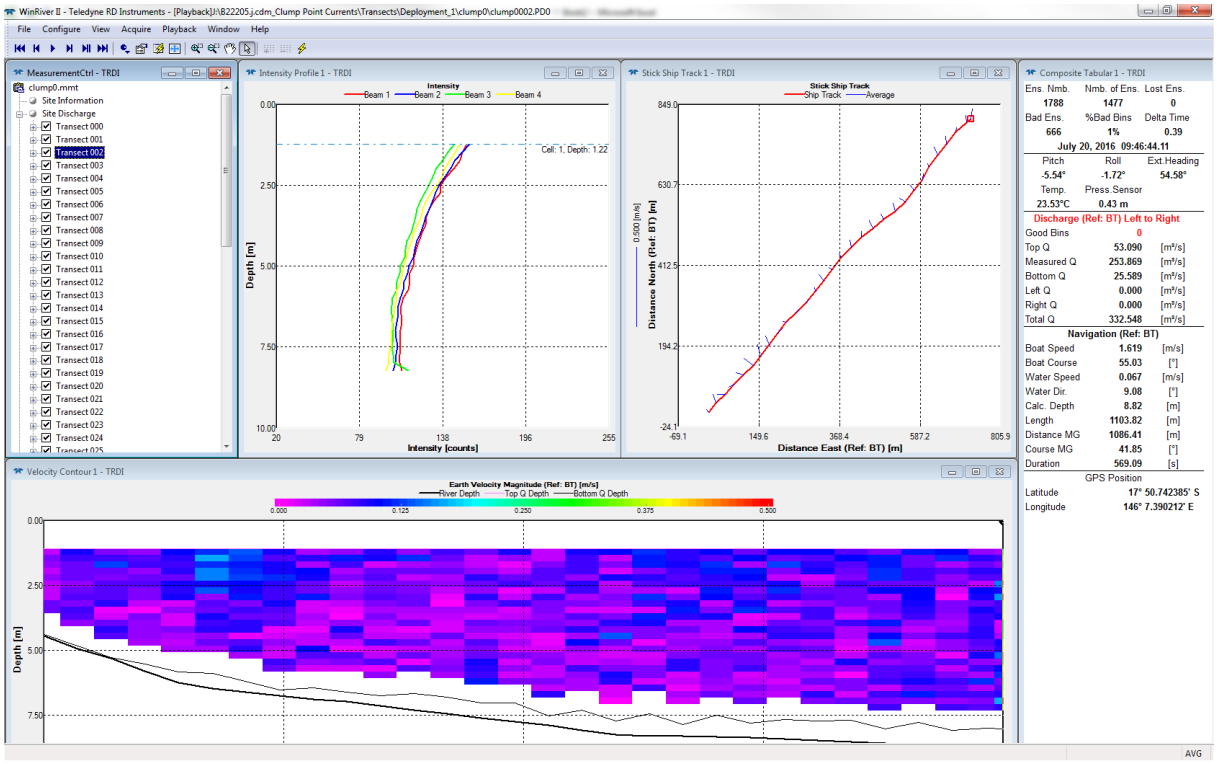

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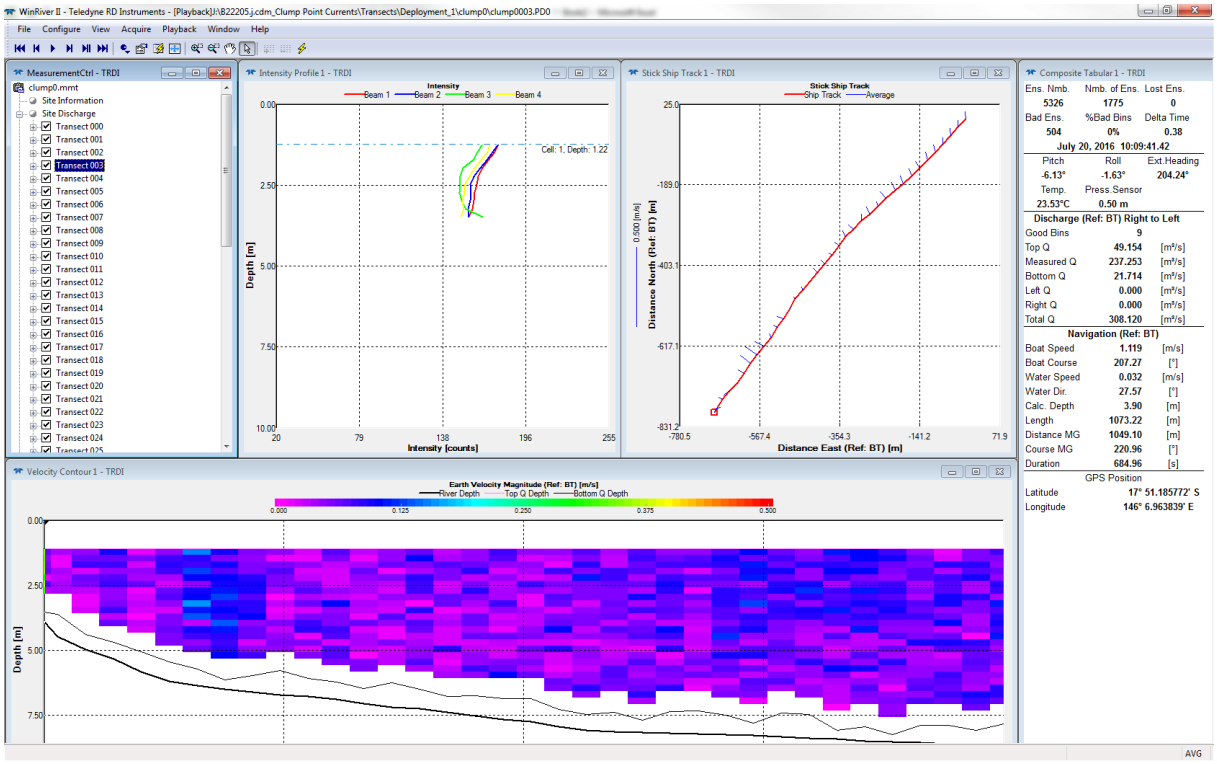

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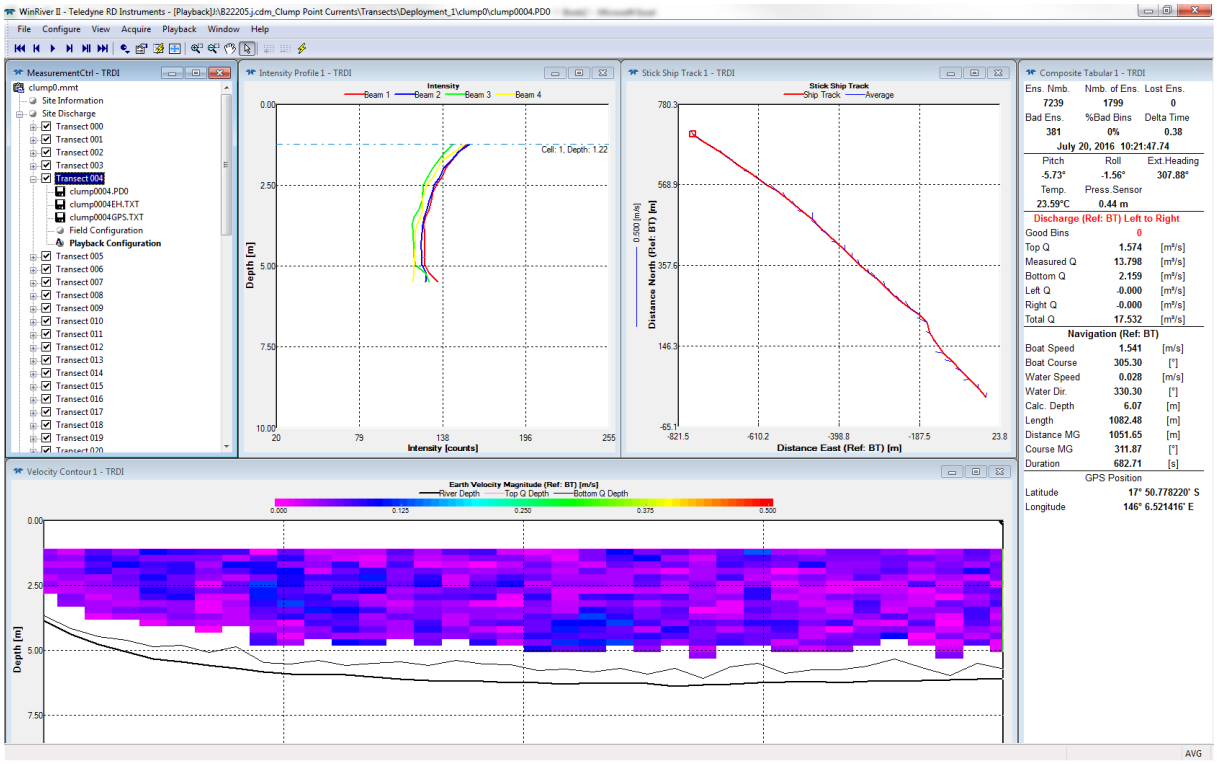

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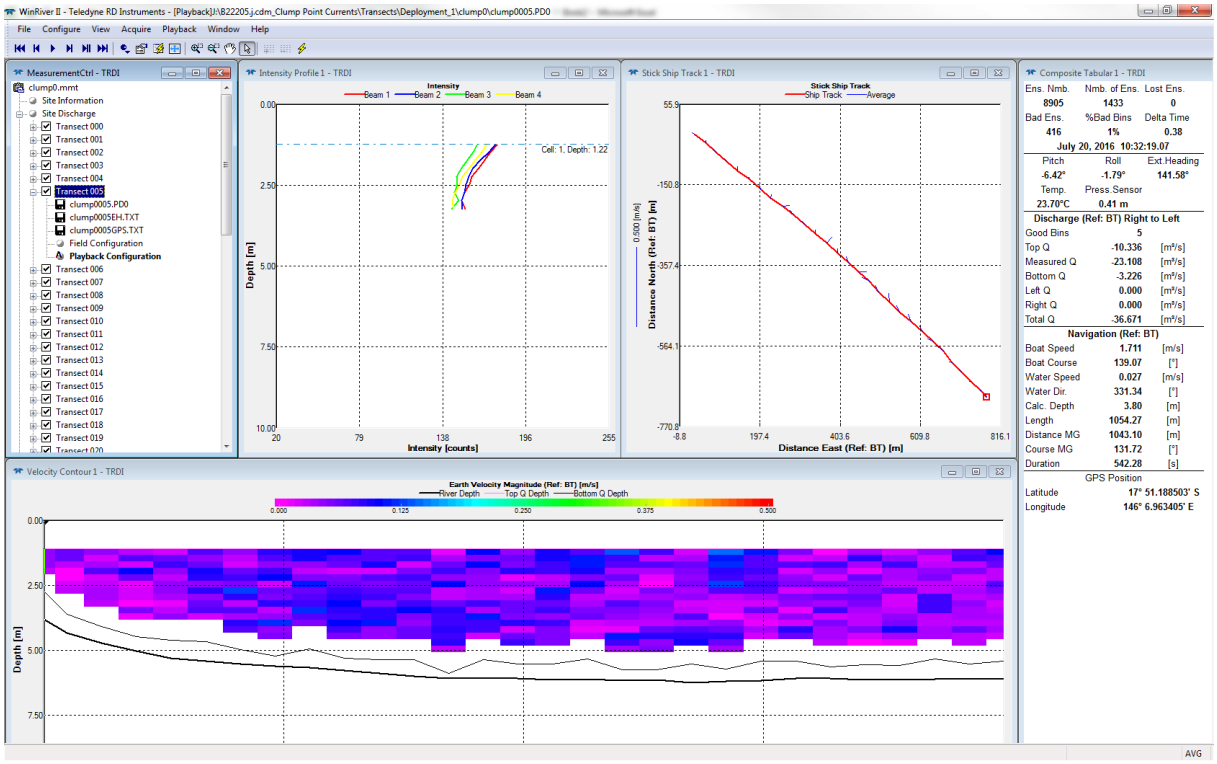

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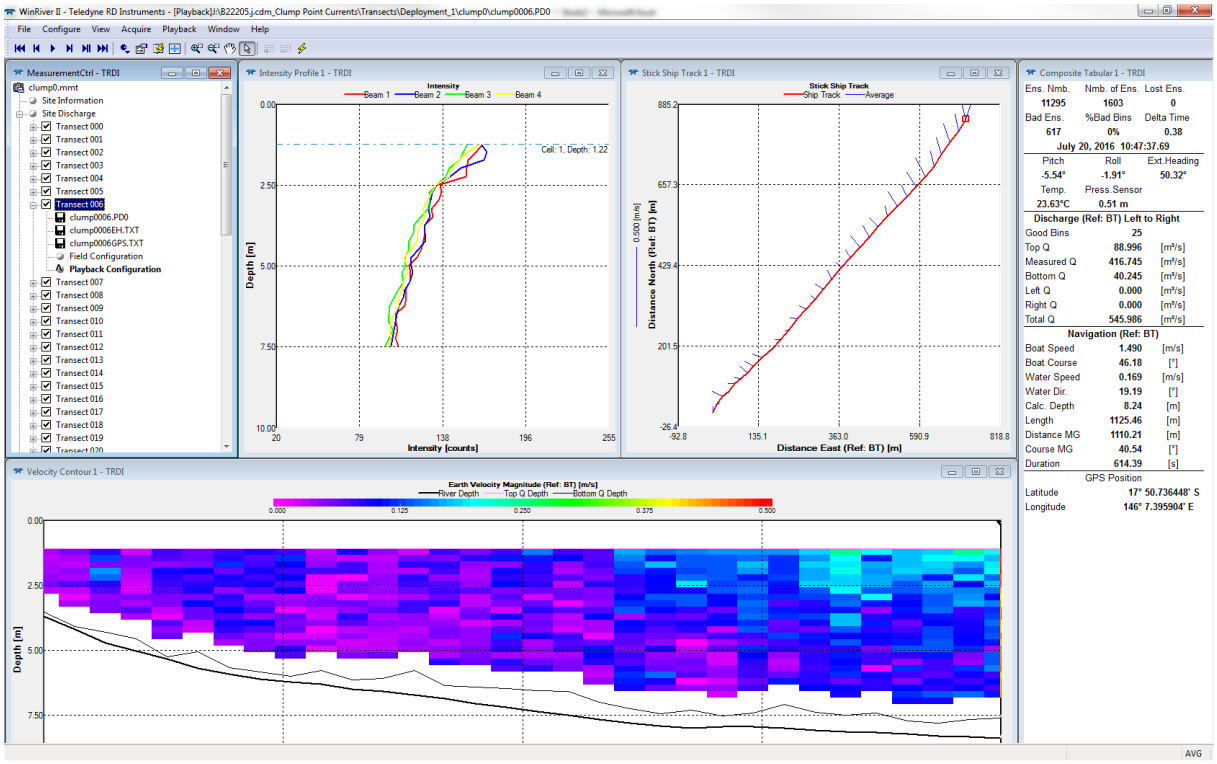

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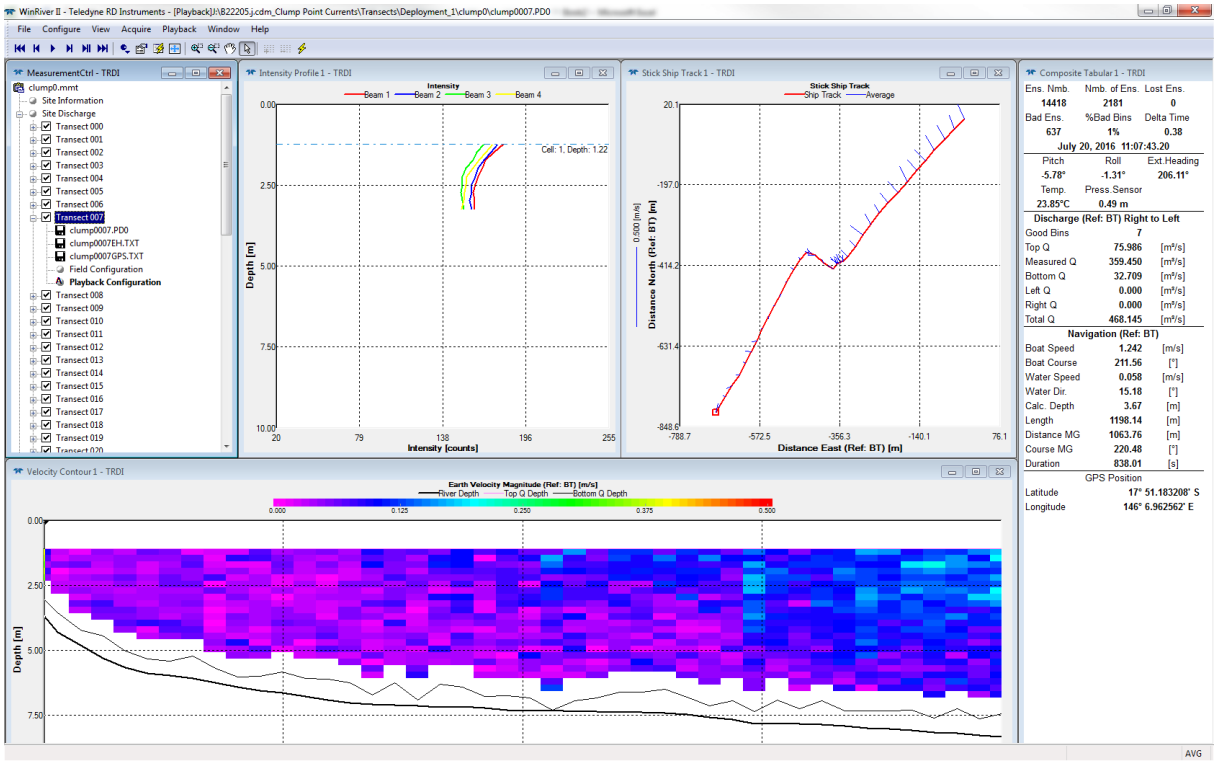

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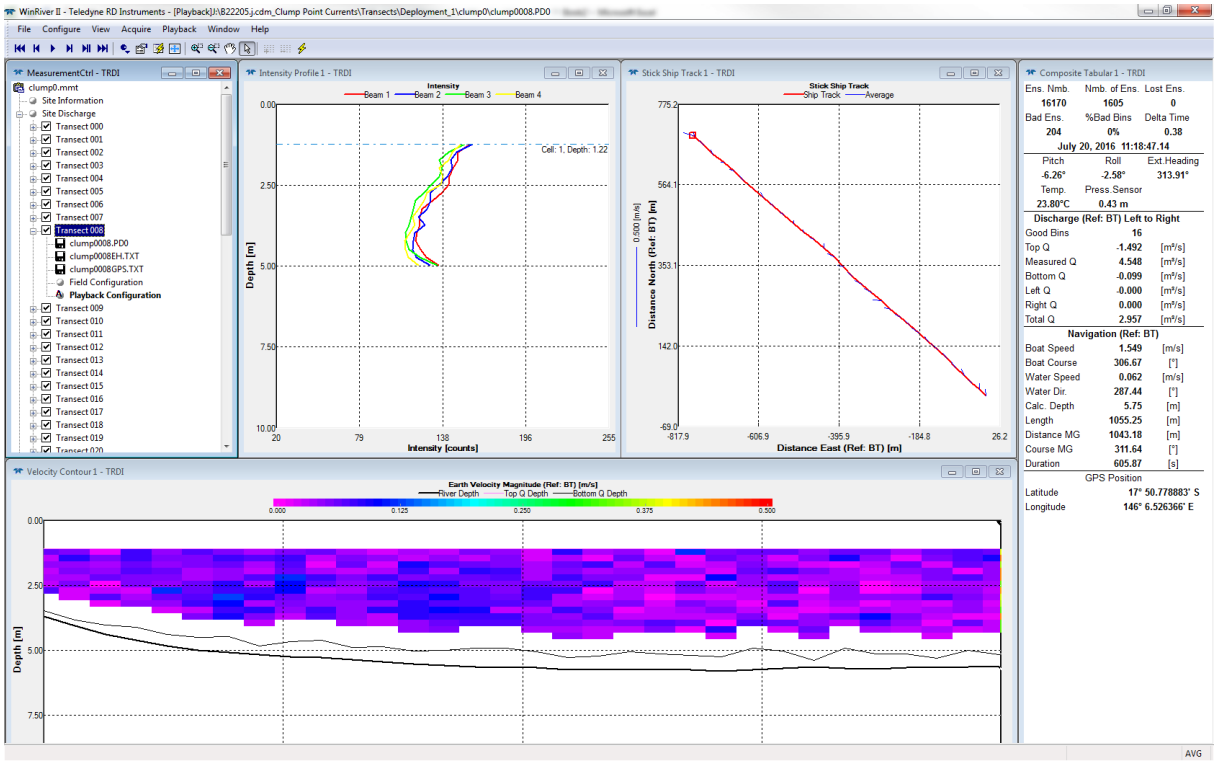

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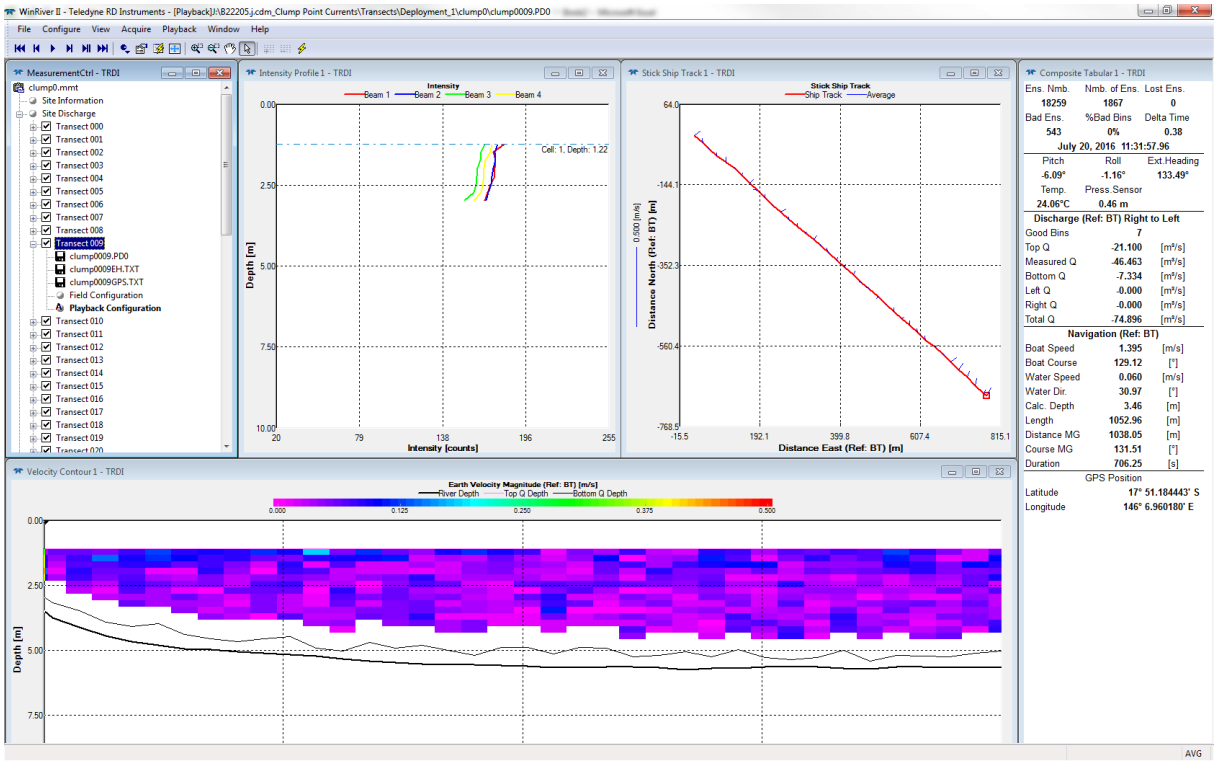

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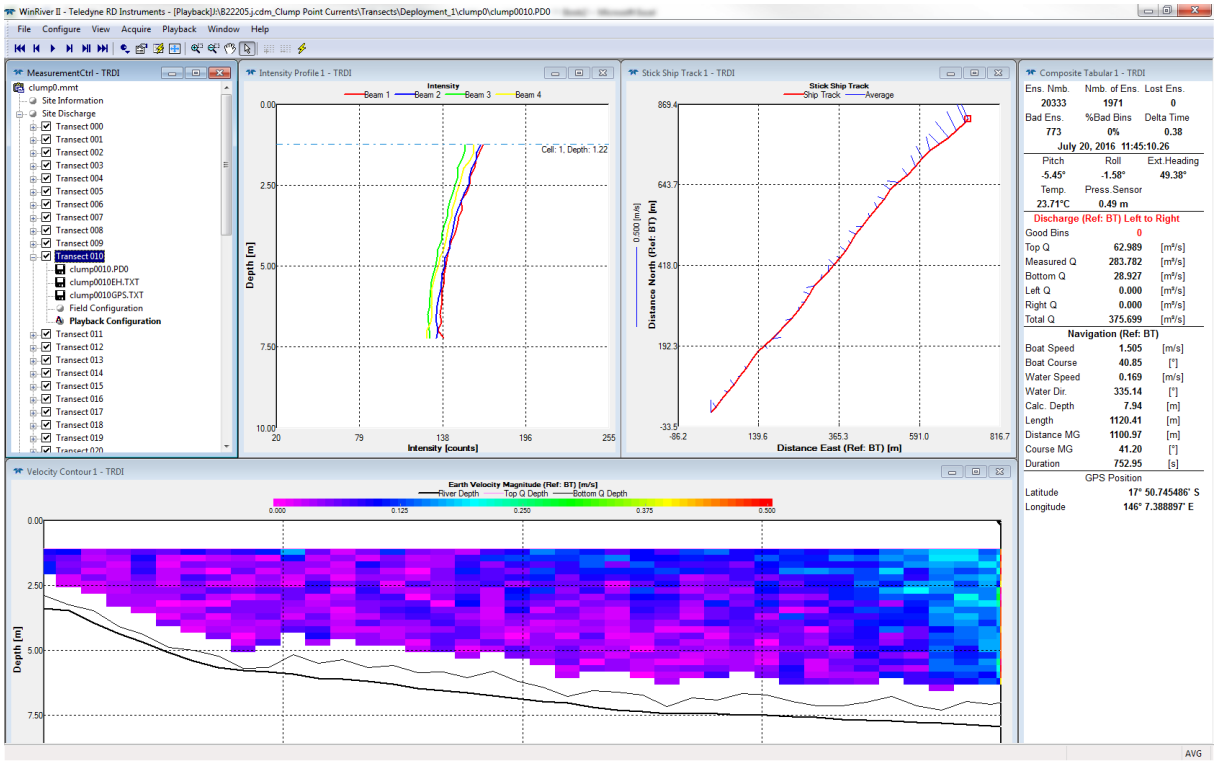

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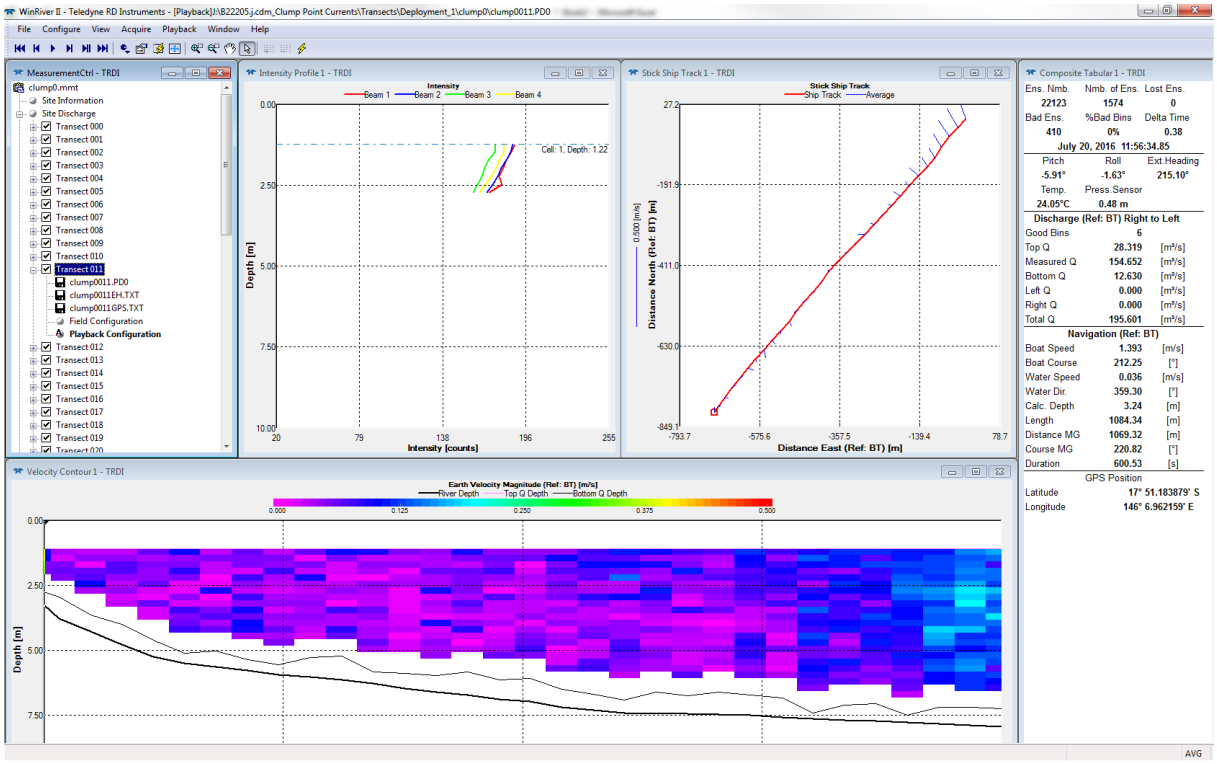

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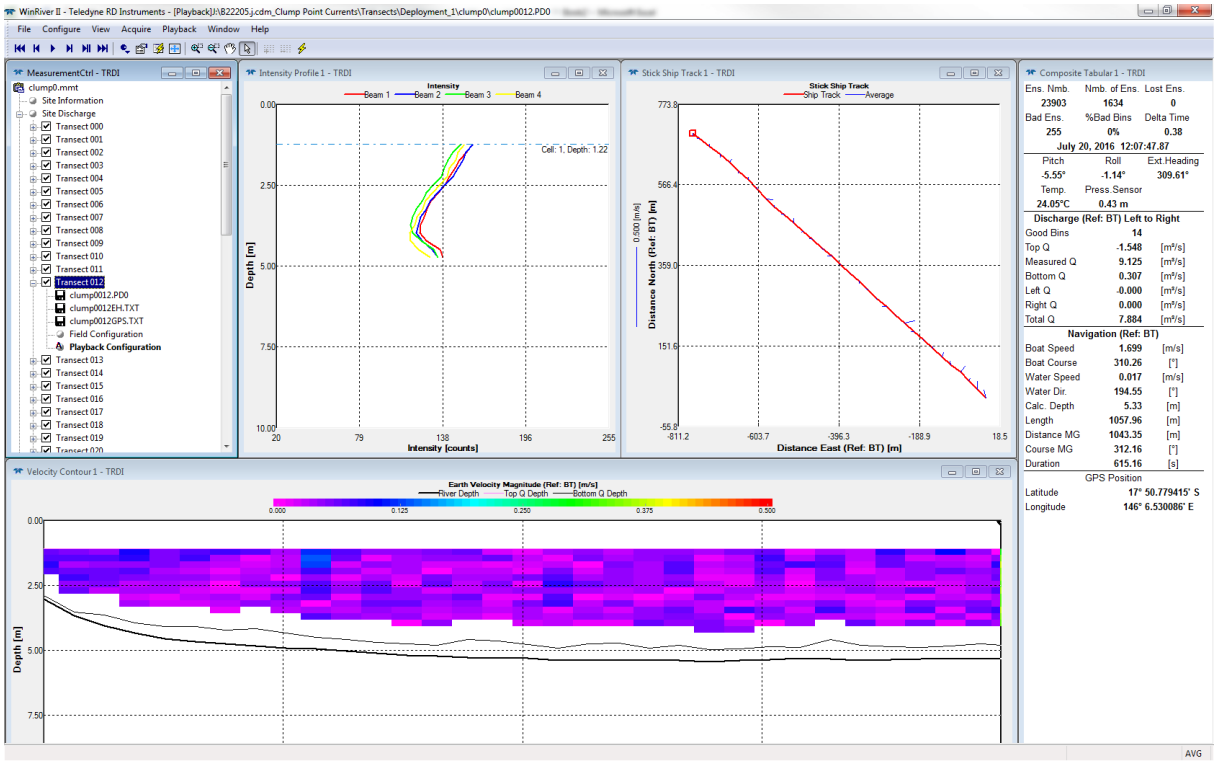

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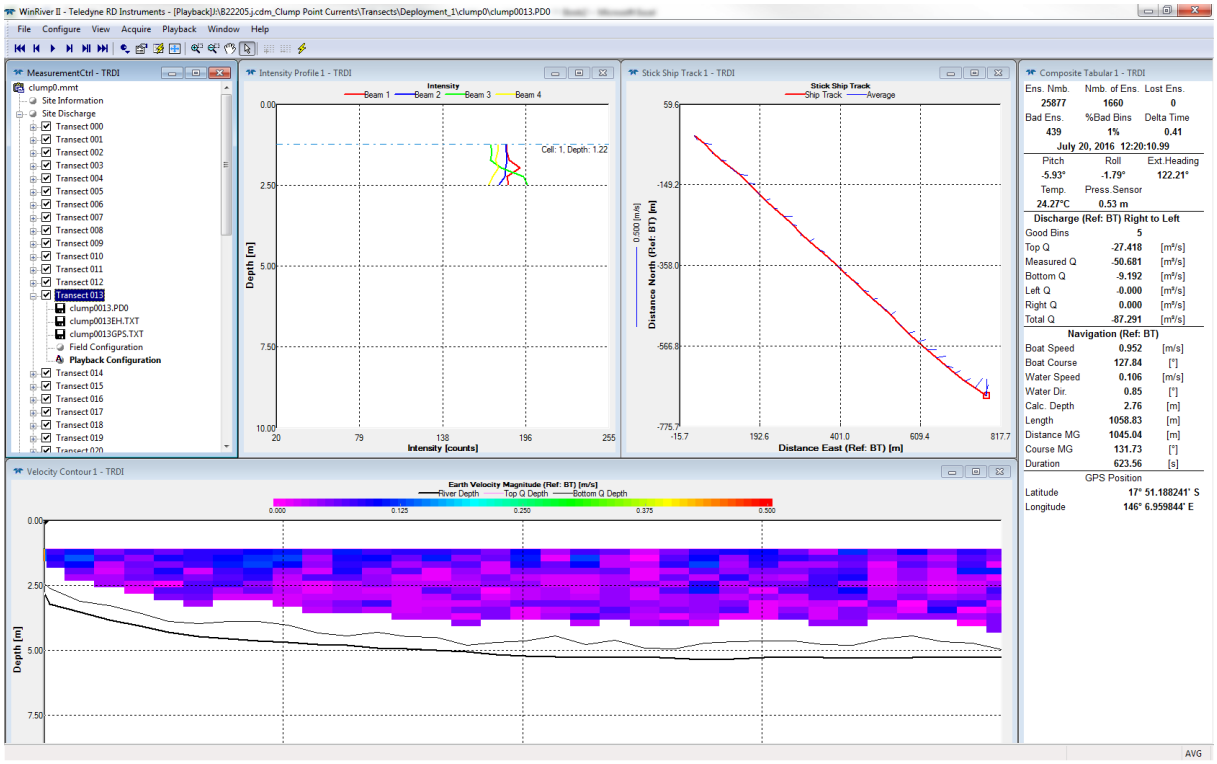

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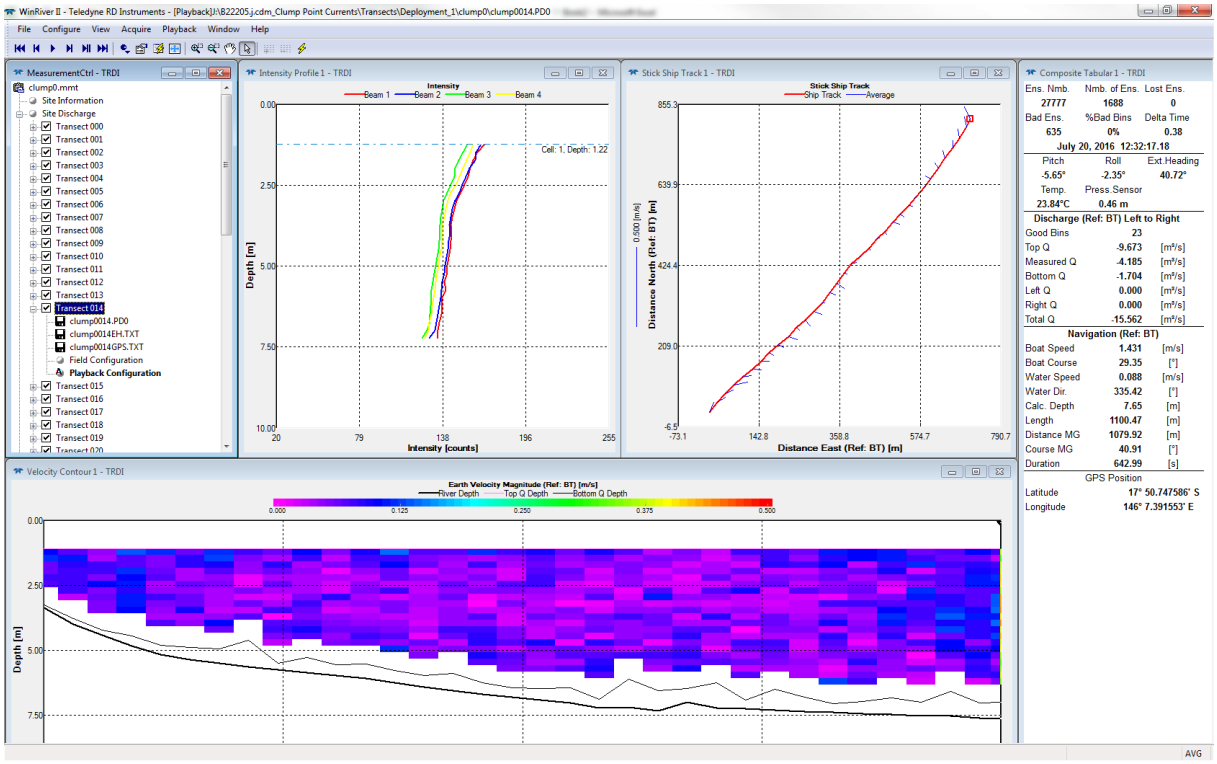
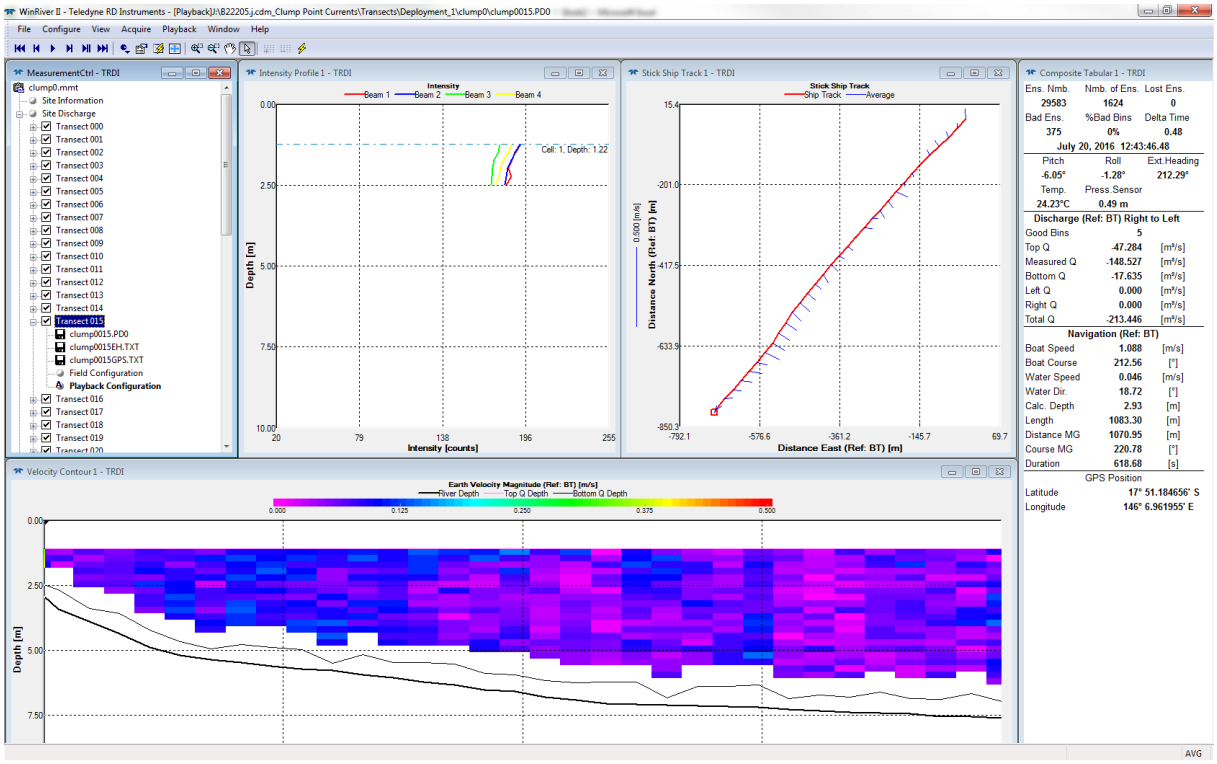
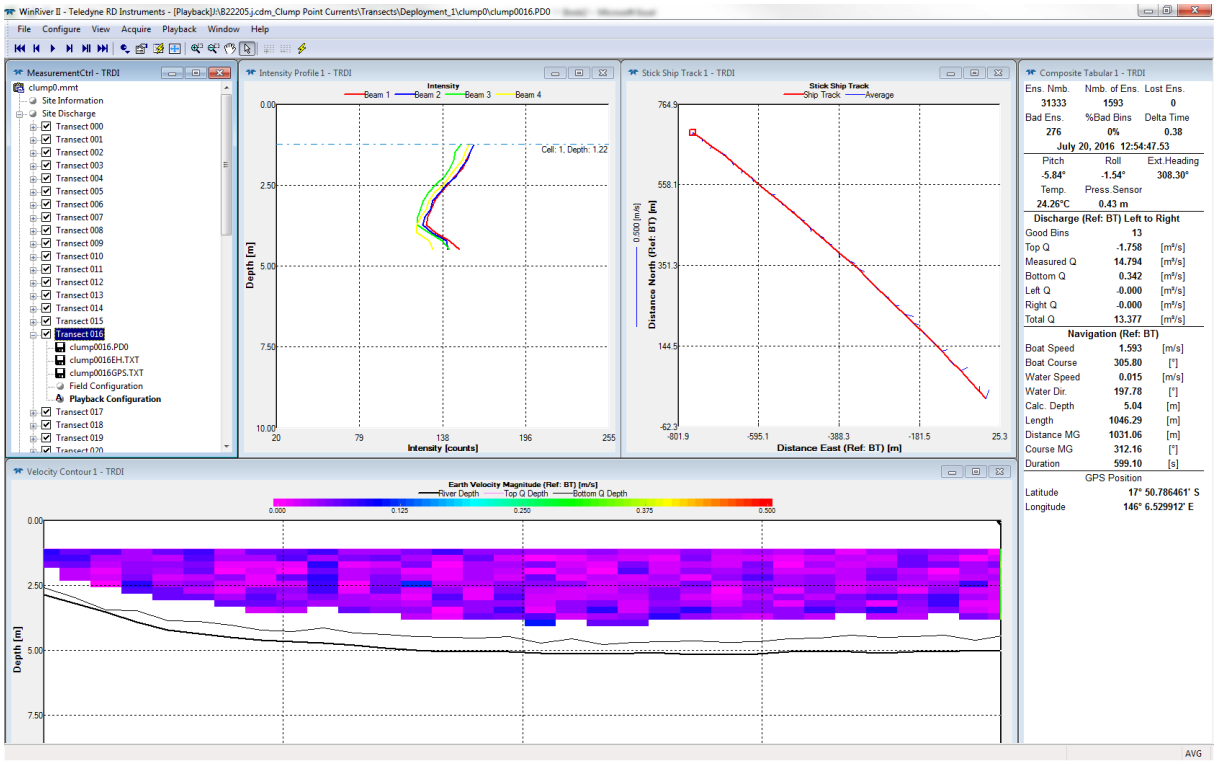


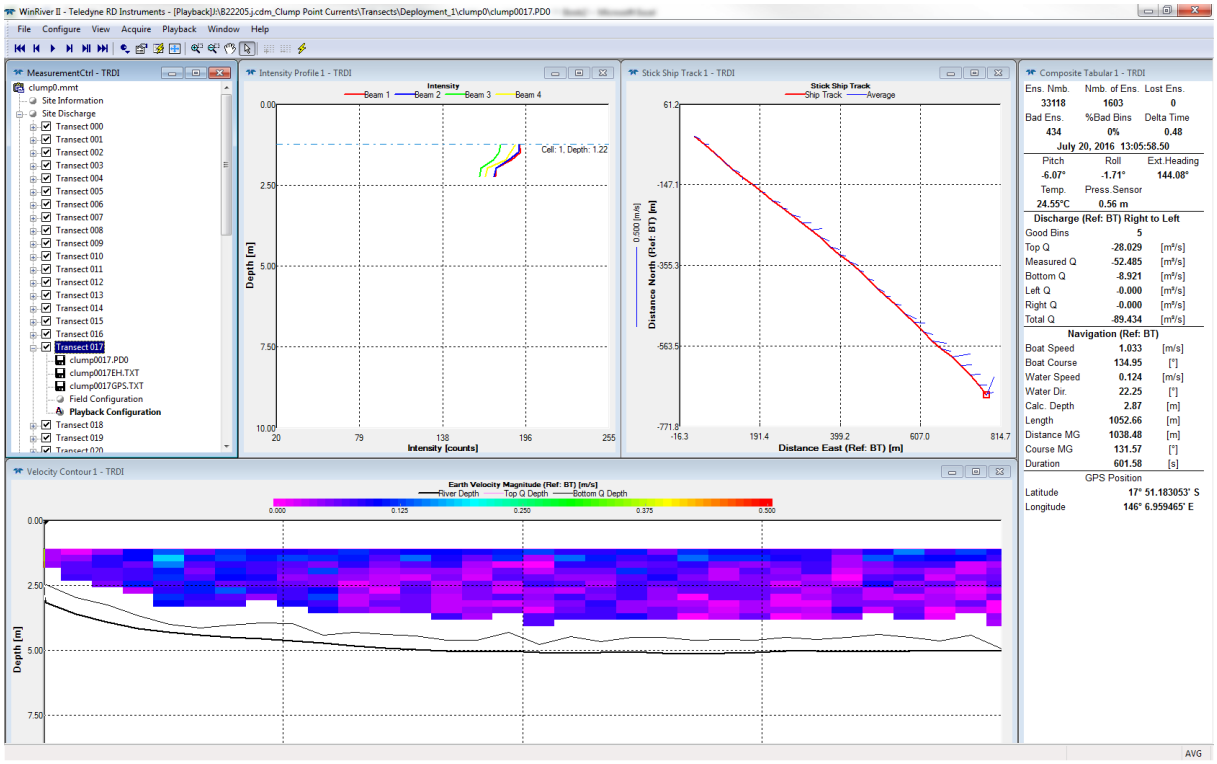
Day 1 Transect 014



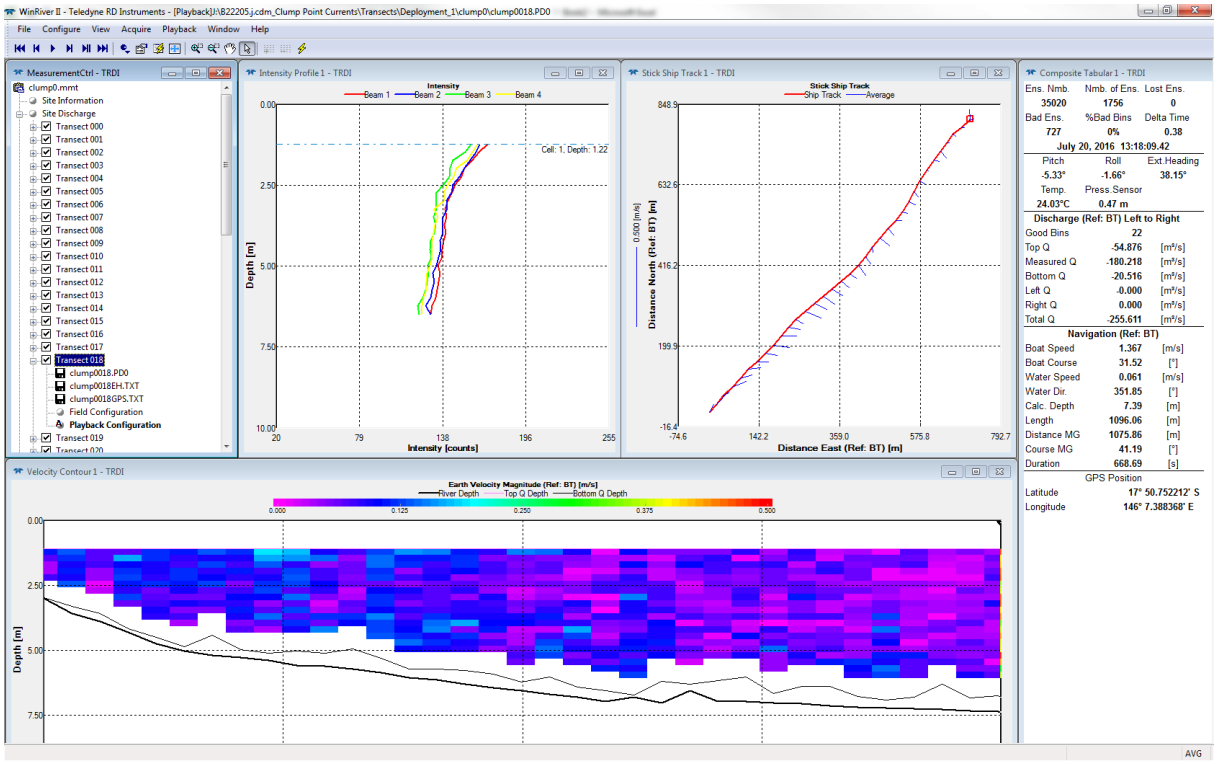
Day 1 Transect 015



Day 1 Transect 016



Day 1 Transect 017



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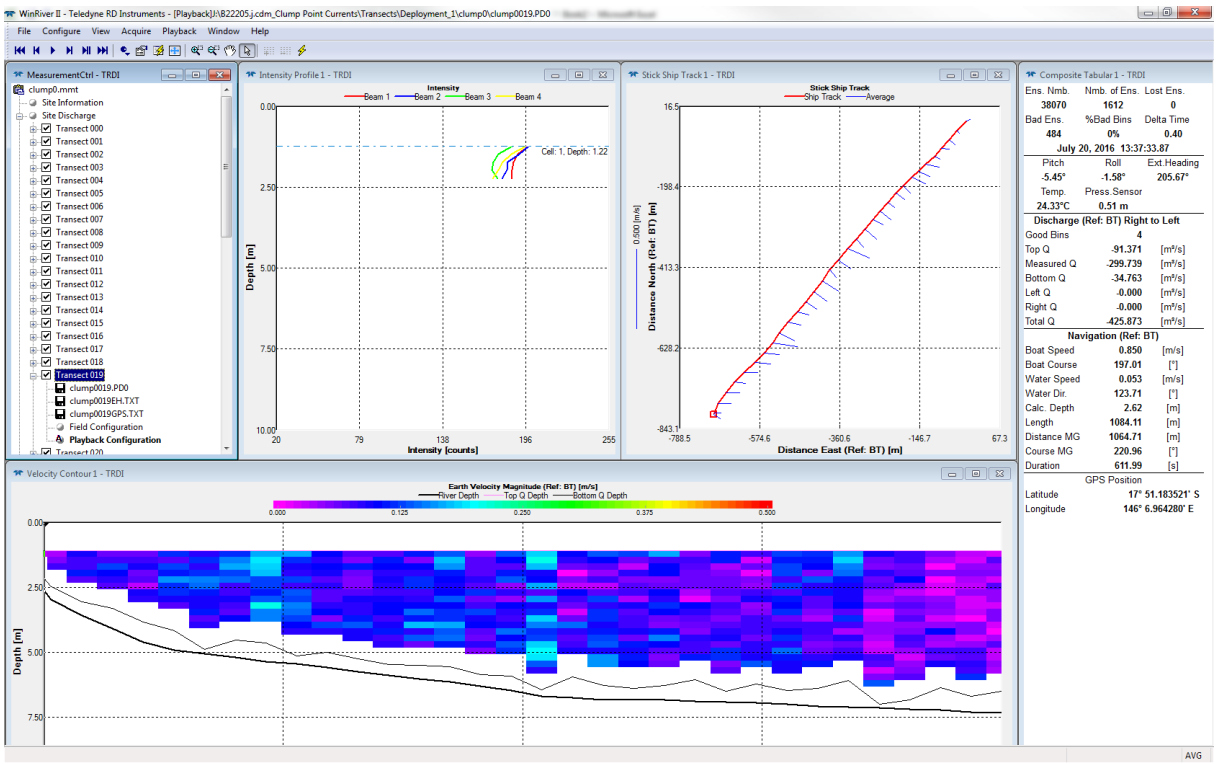

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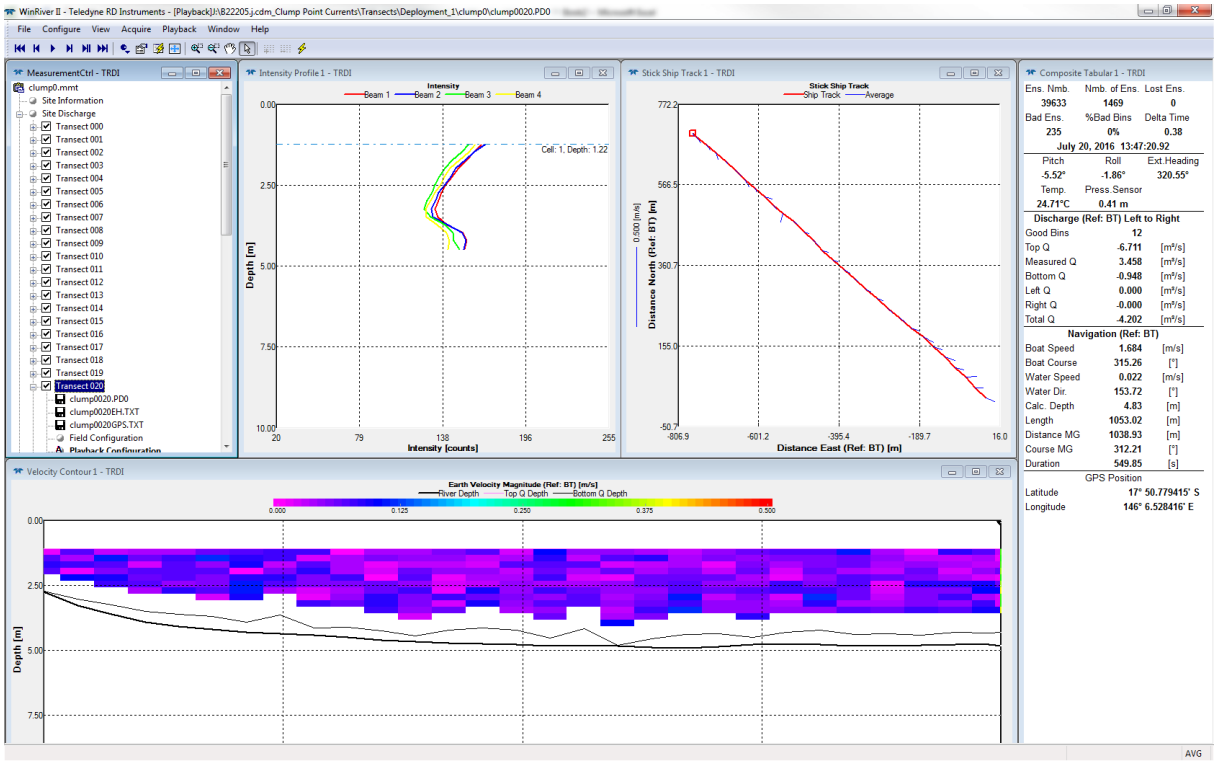
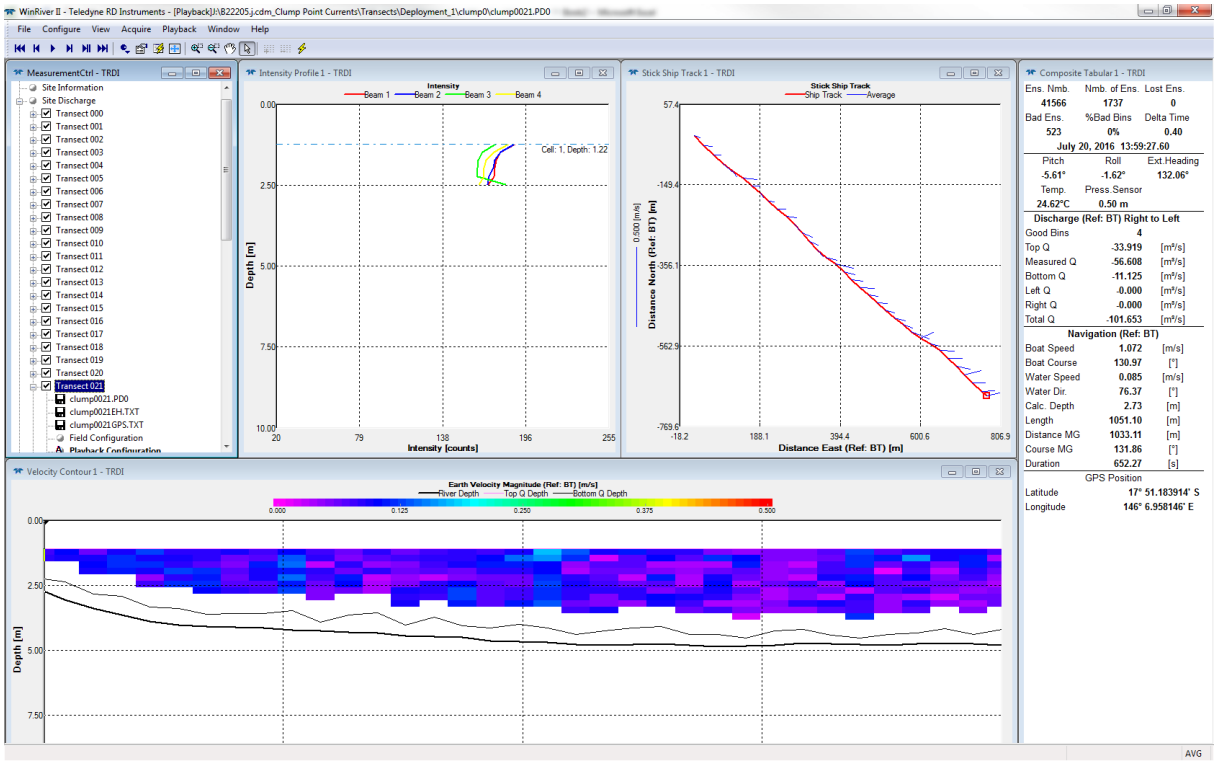


Day 1 Transect 020



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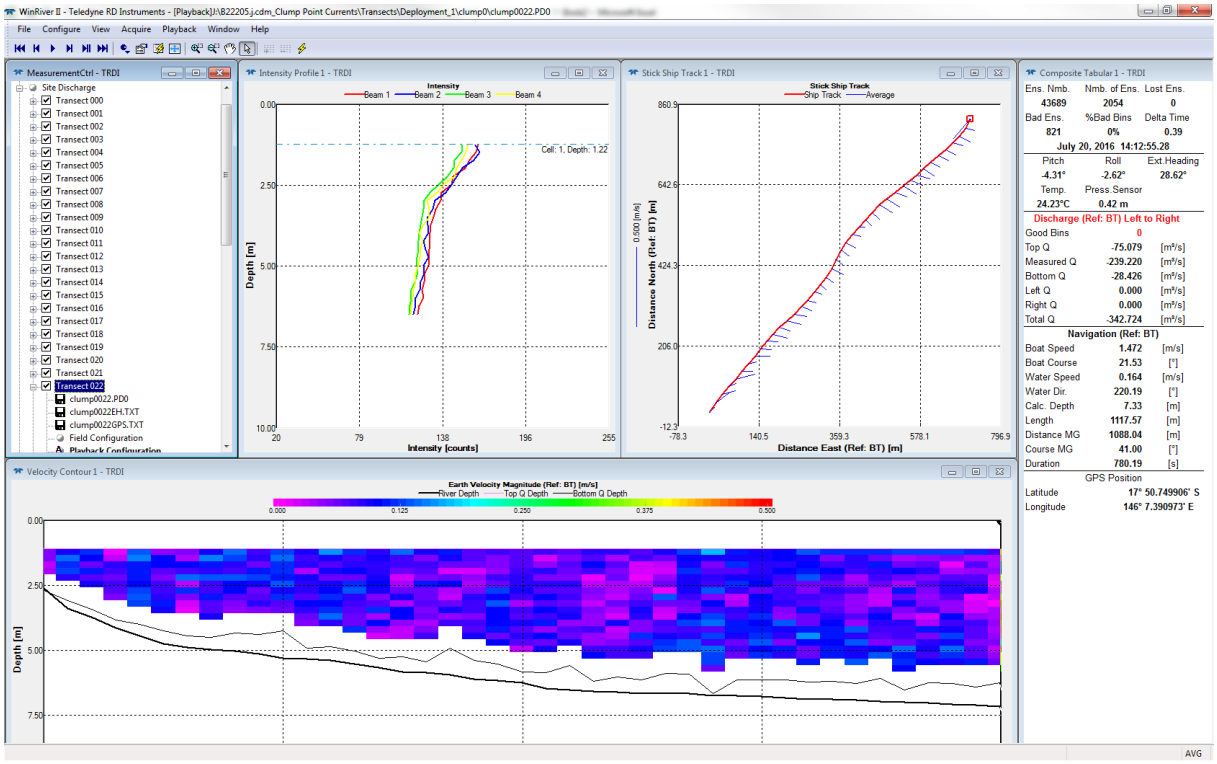
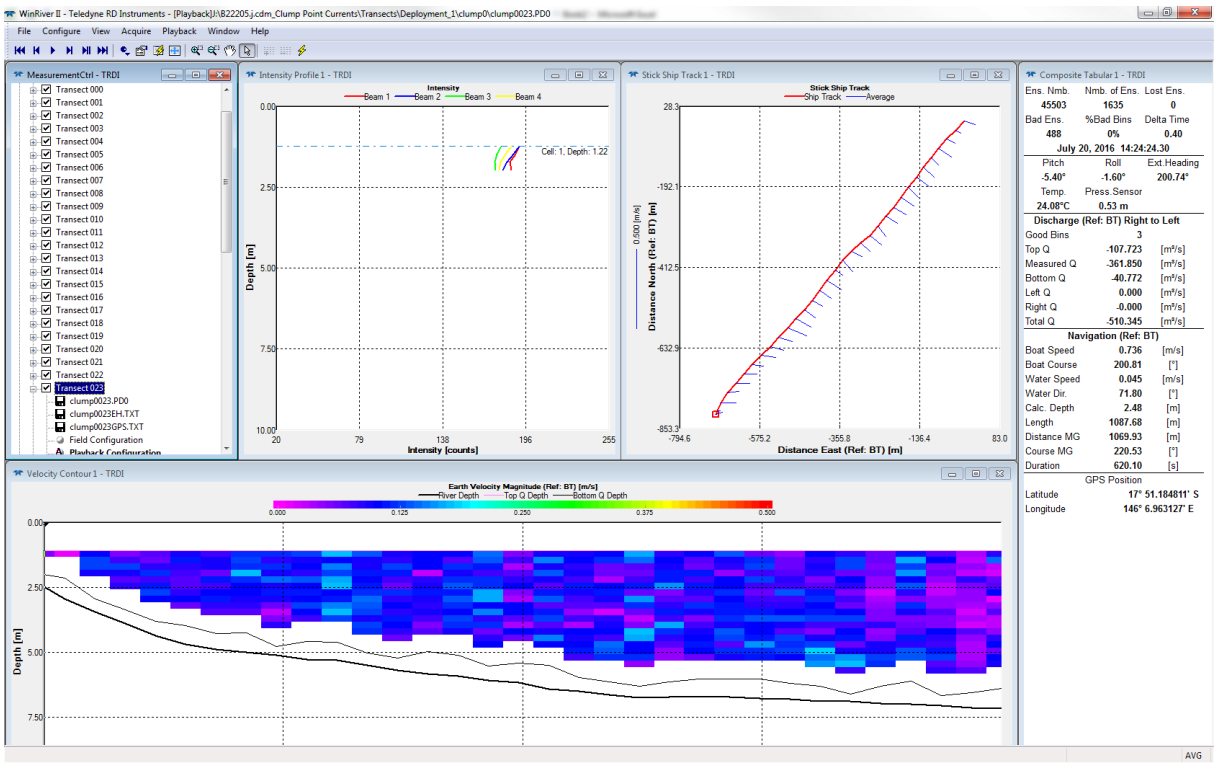
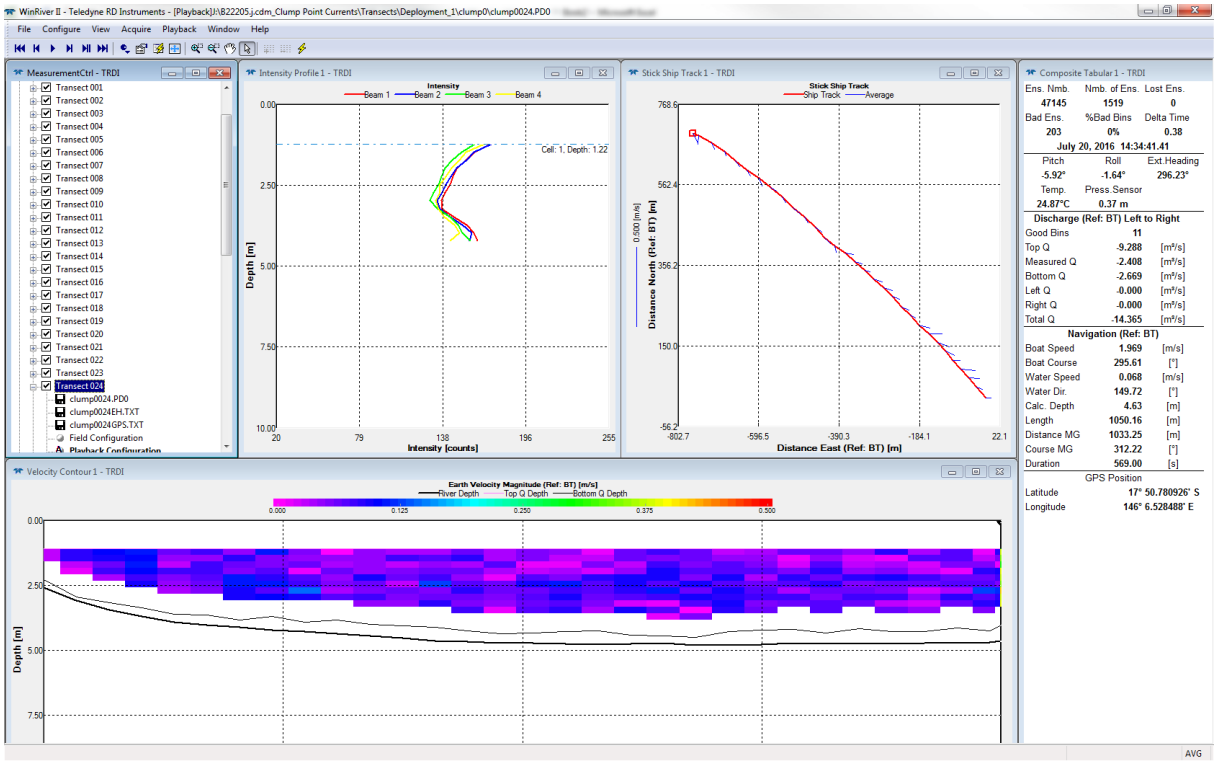


Day 1 Transect 022



Day 1 Transect 023



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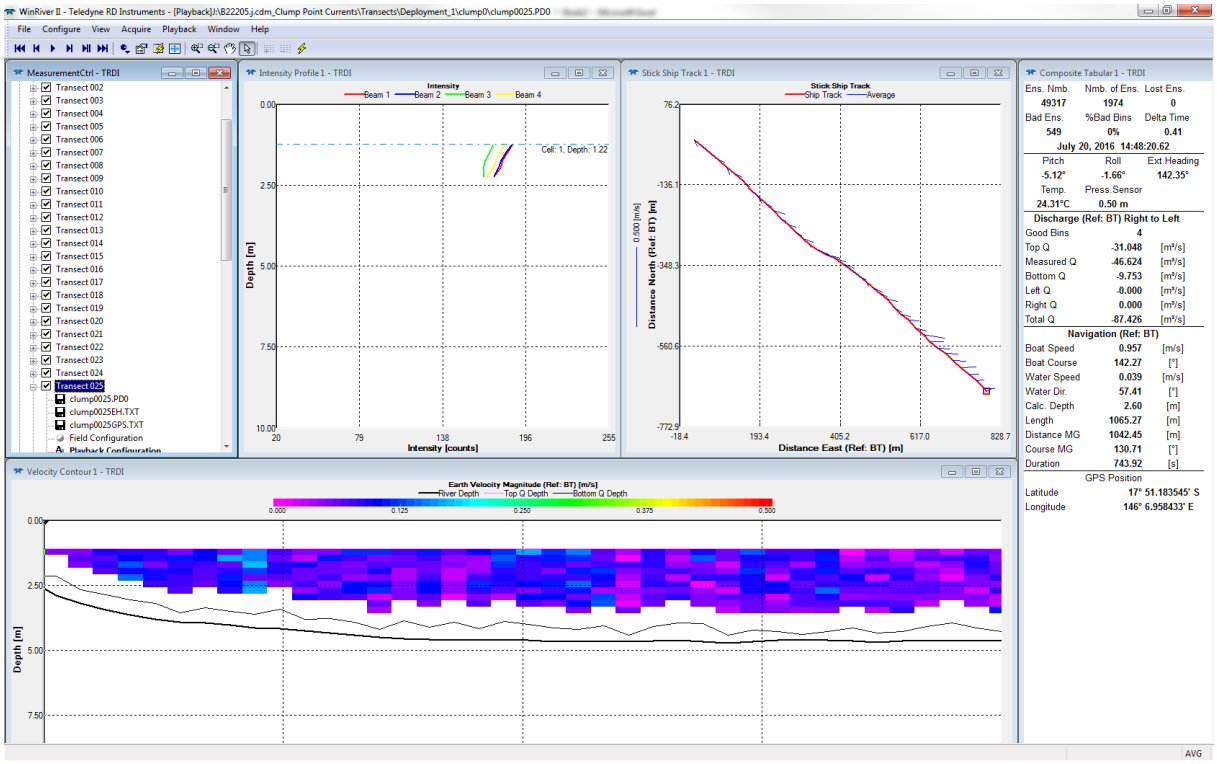
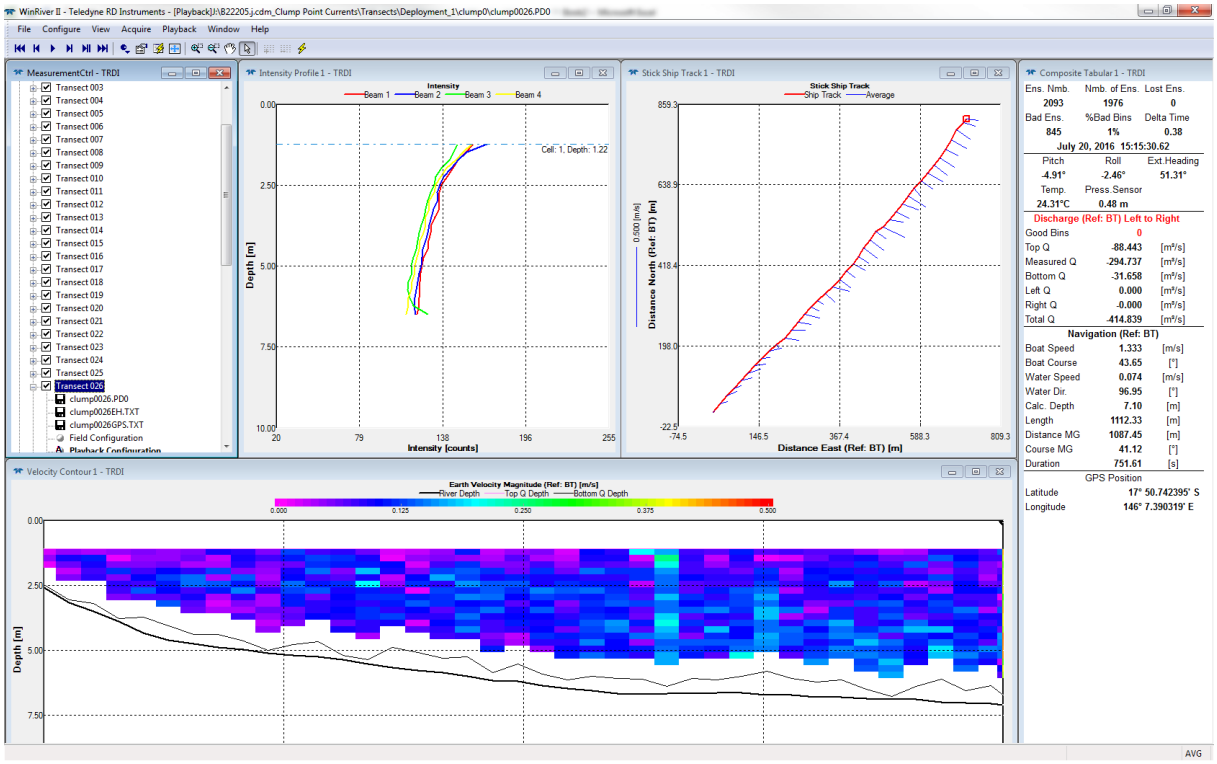


Day 1 Transect 025



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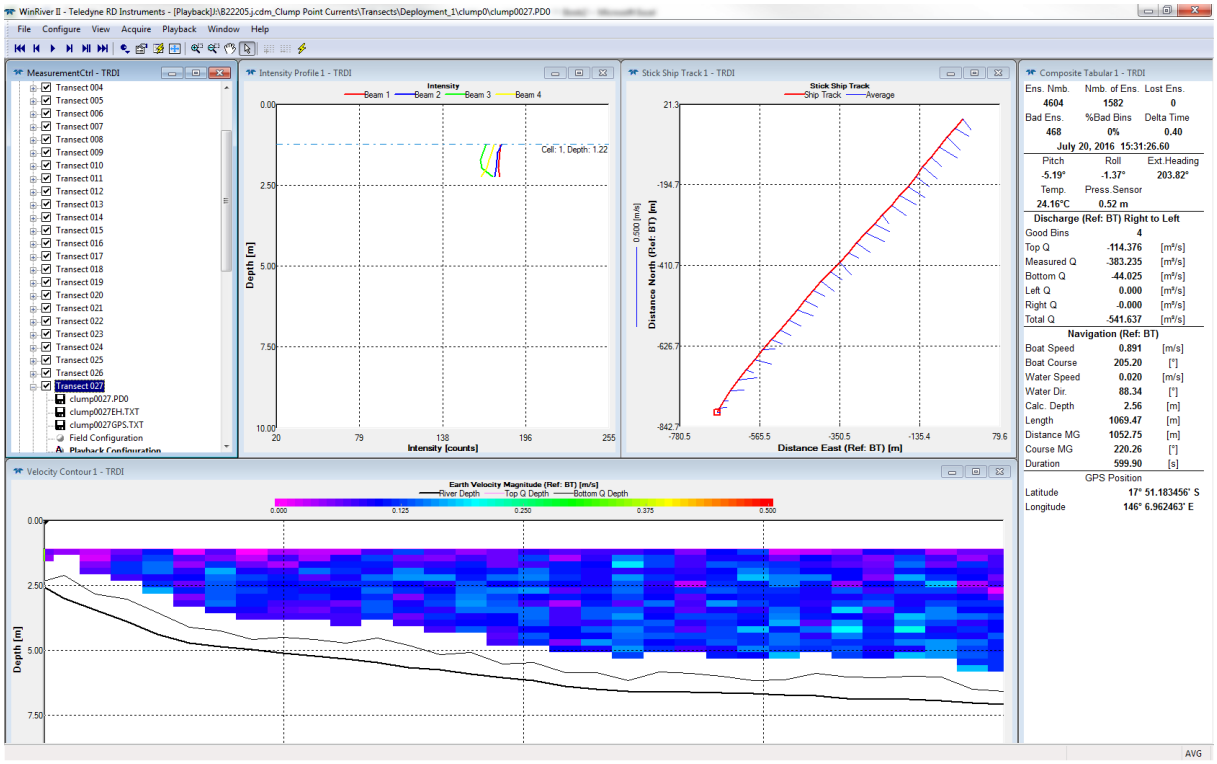
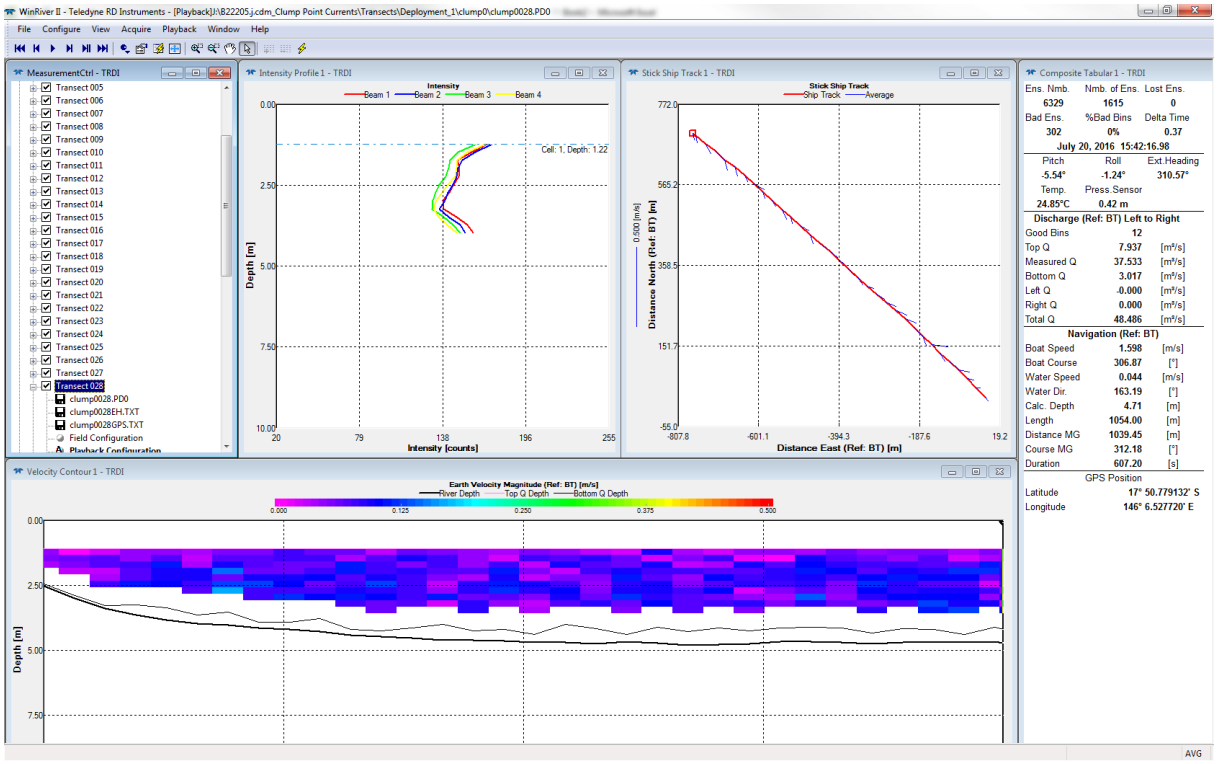
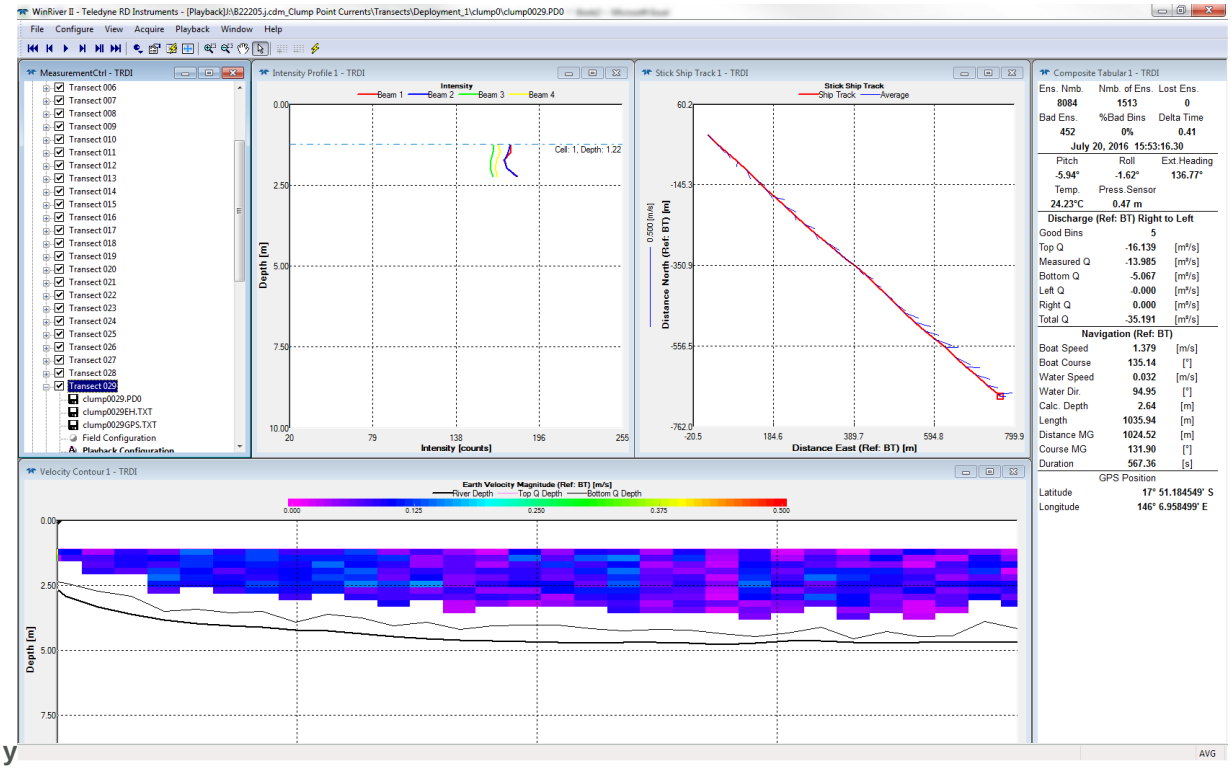


Day 1 Transect 027



Day 1 Transect 028



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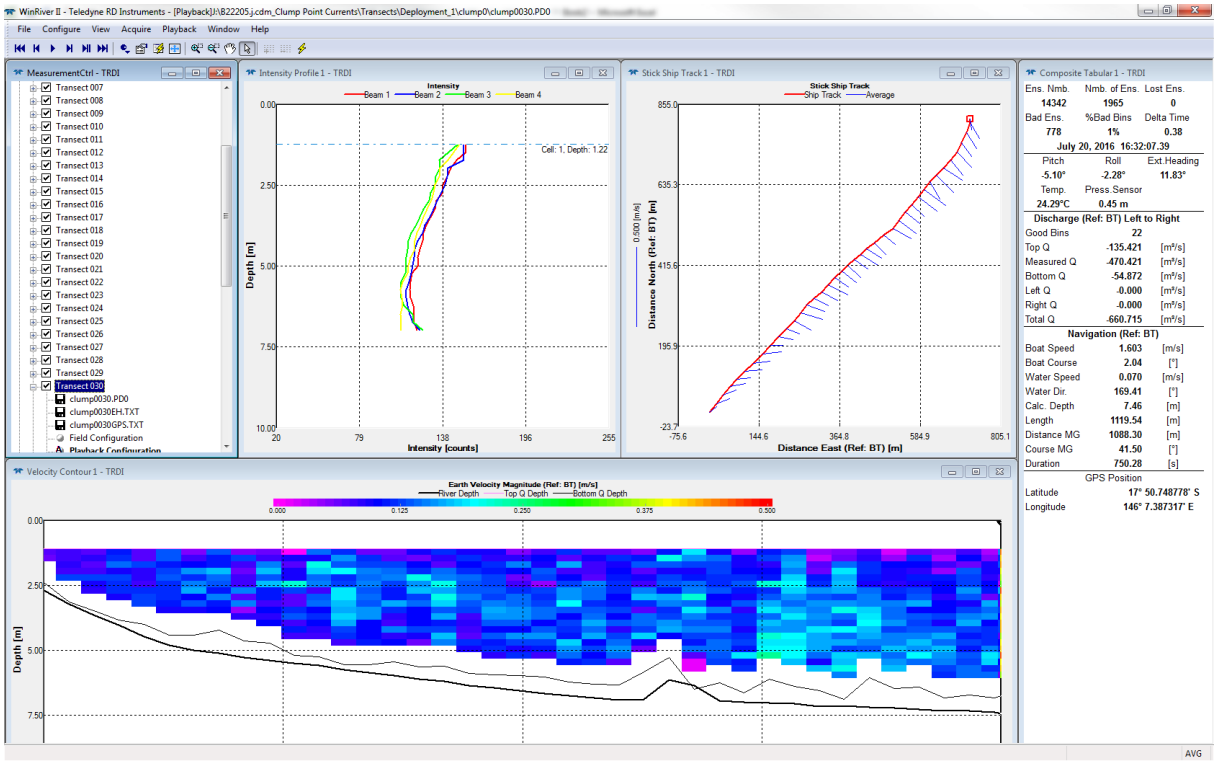
Day 1 Transect 029



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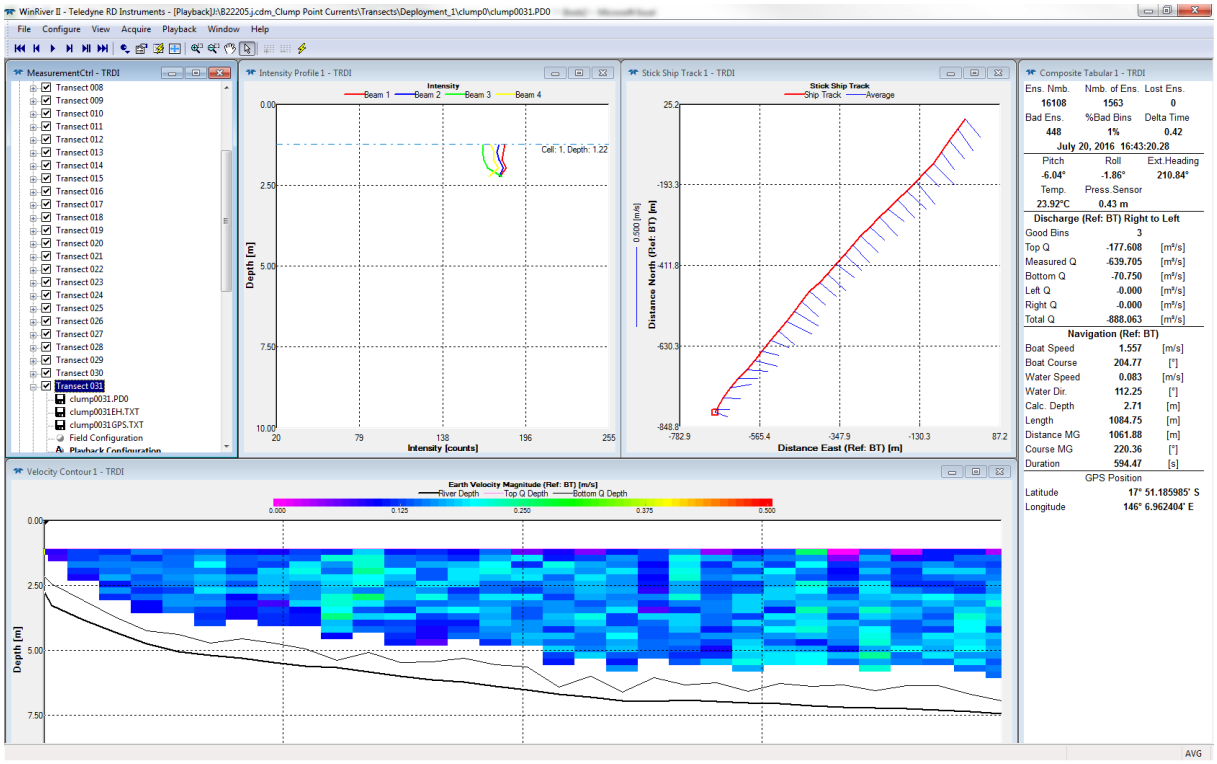
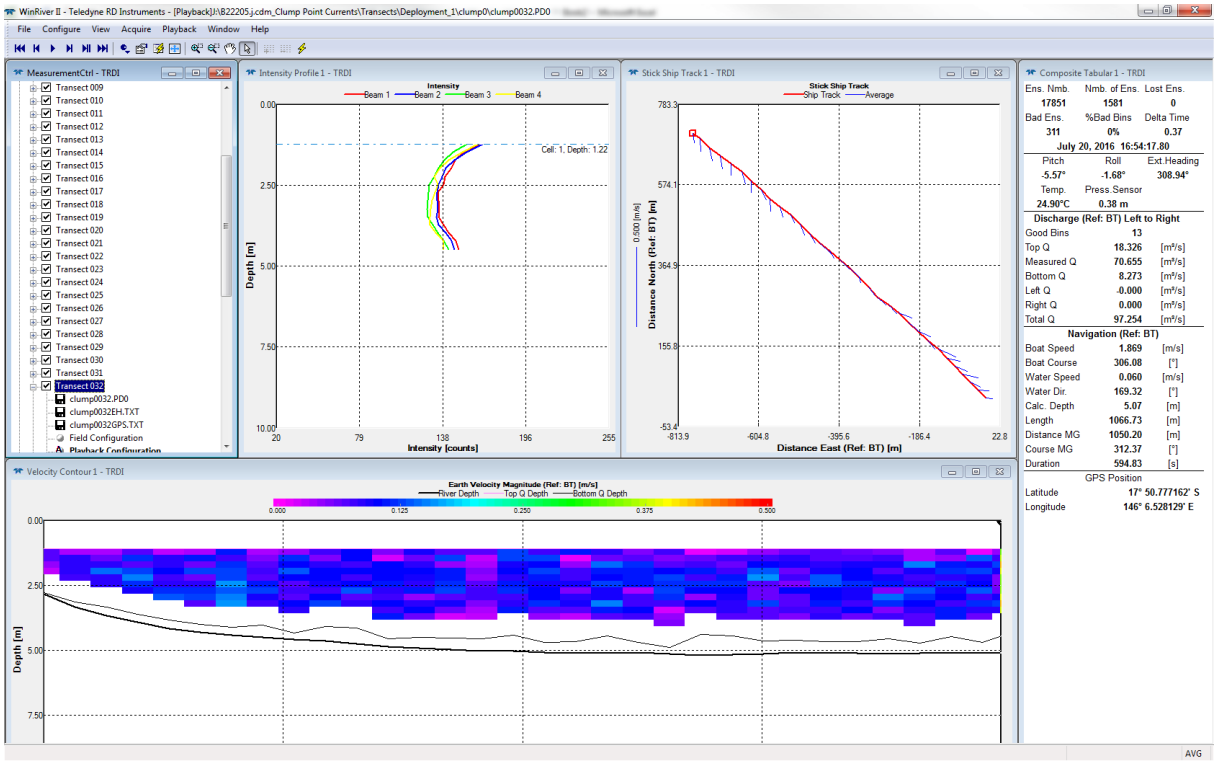
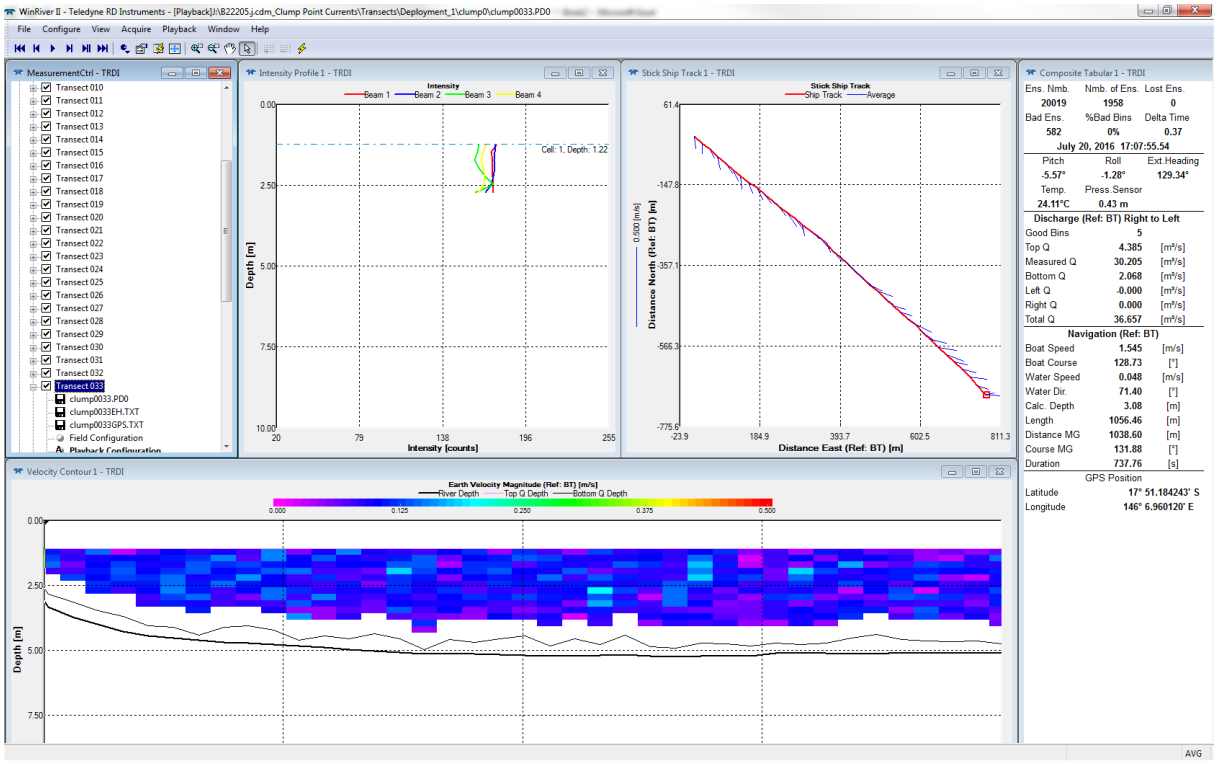


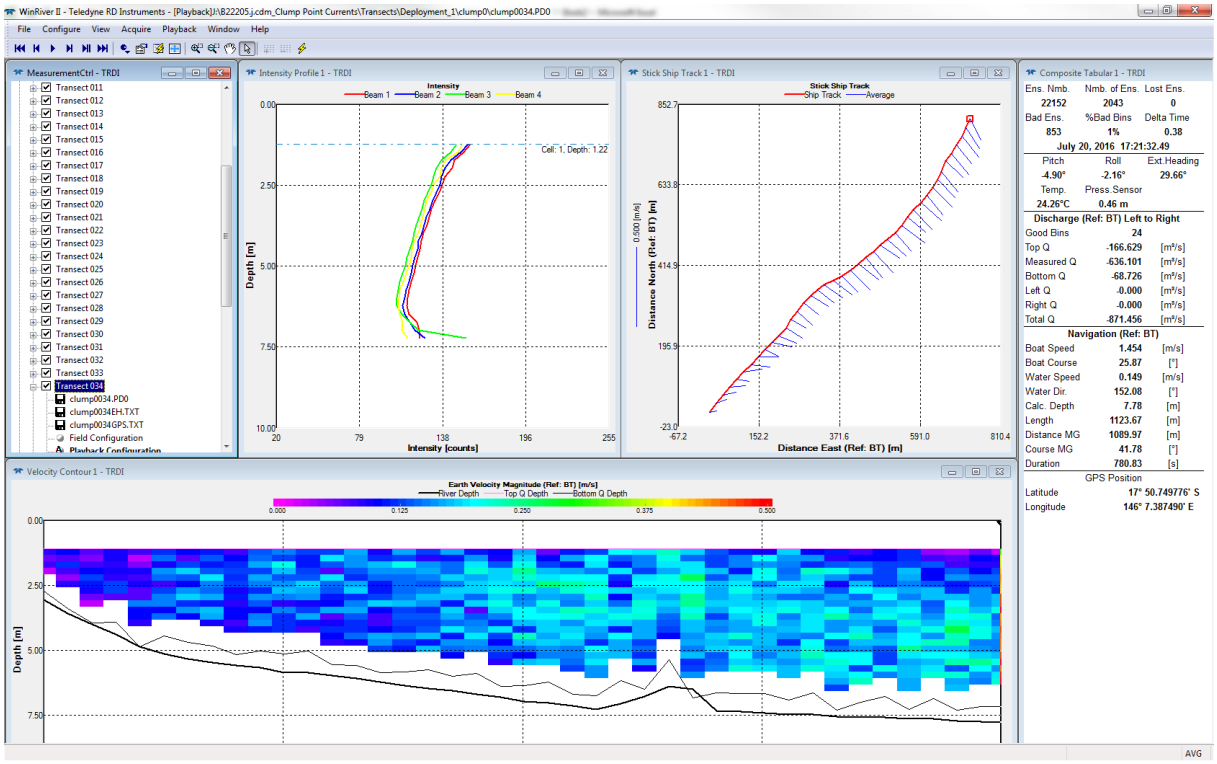
Day 1 Transect 031



Day 1 Transect 032



Day 1 Transect 033



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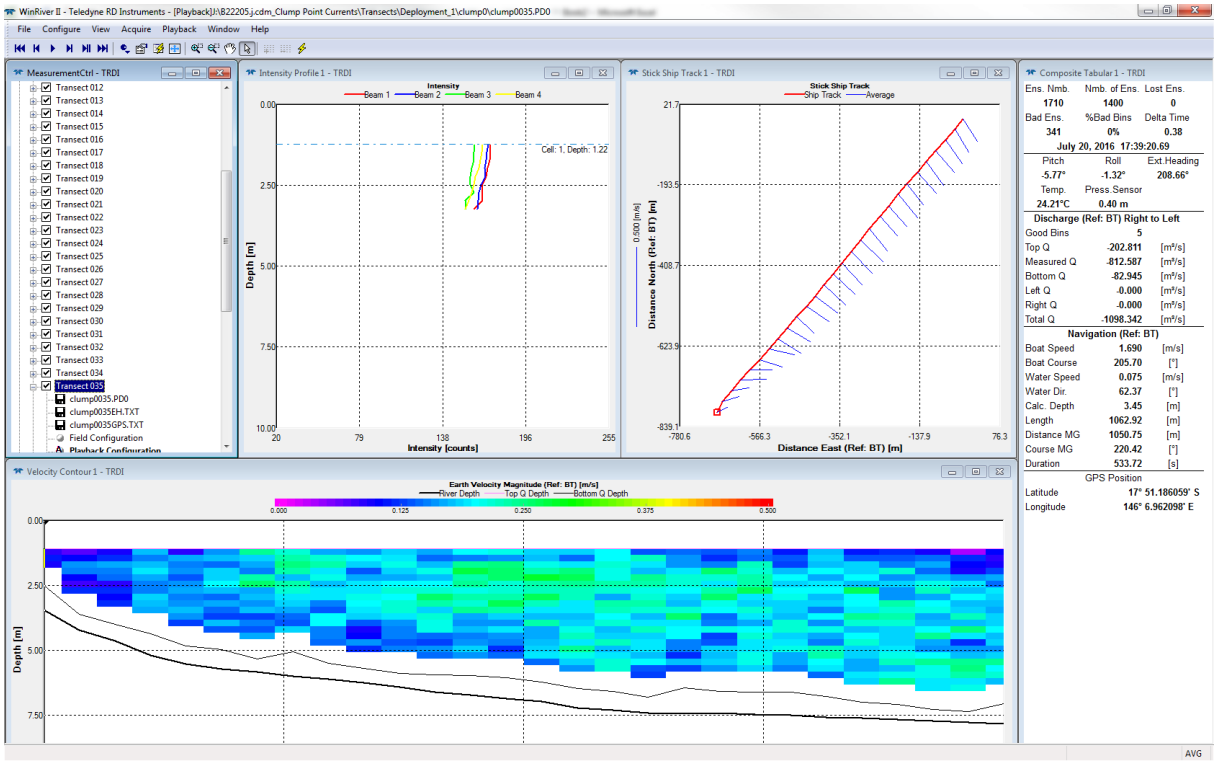

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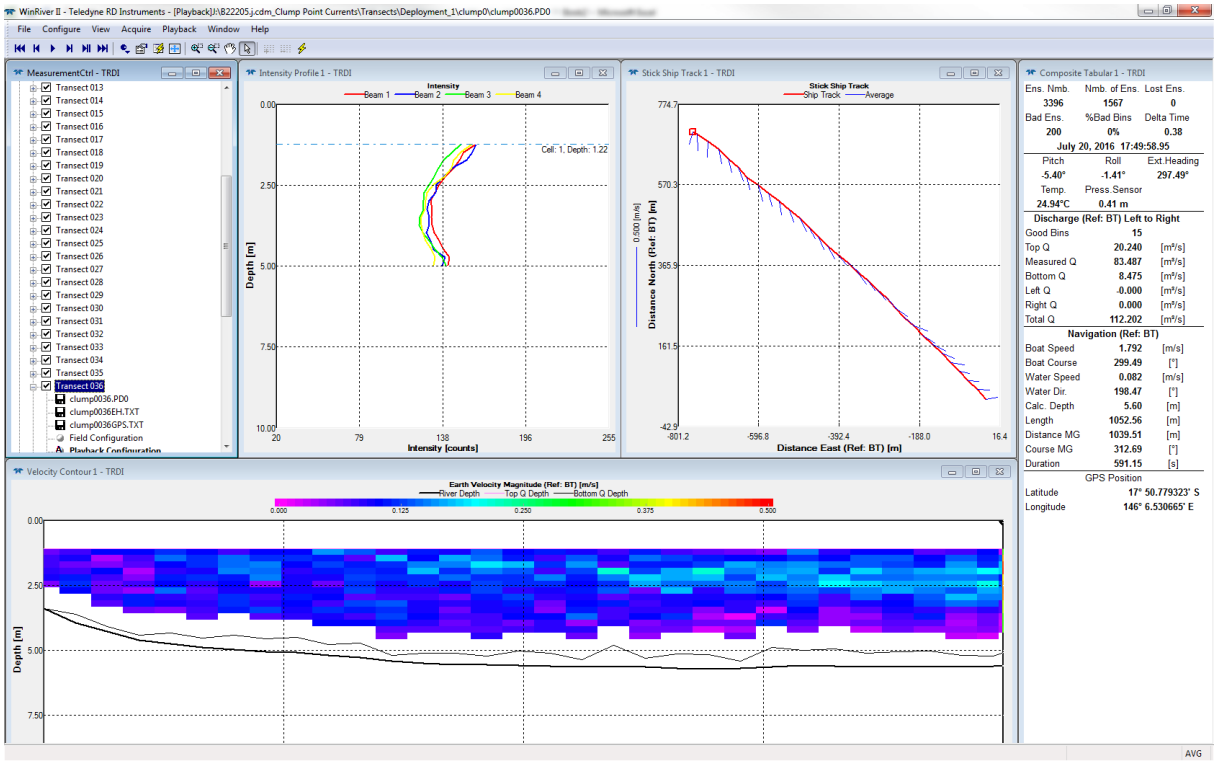
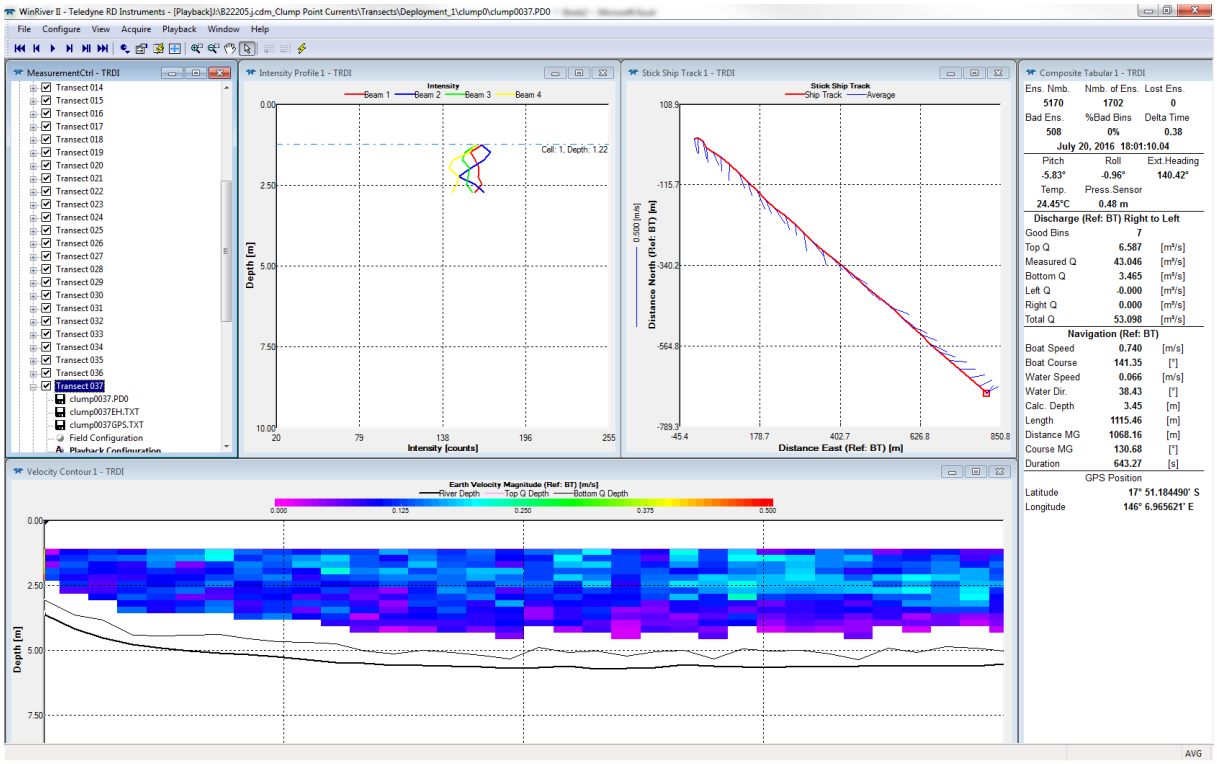
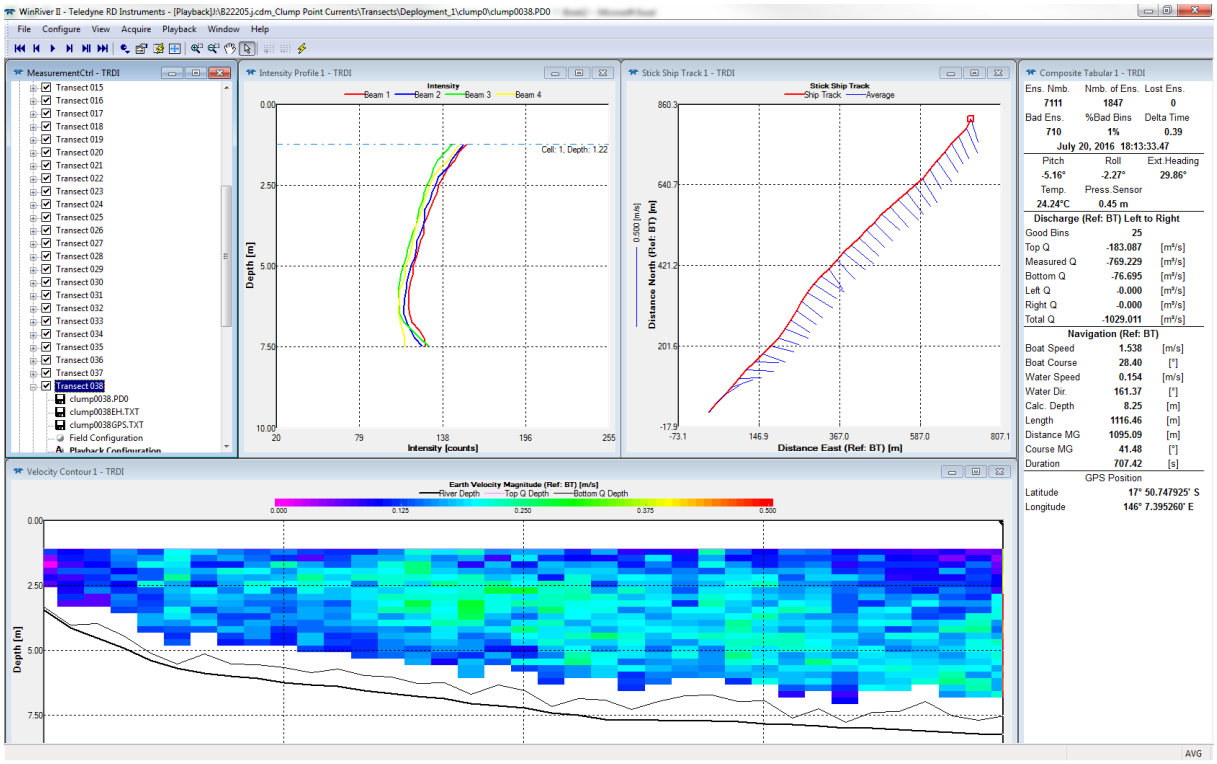


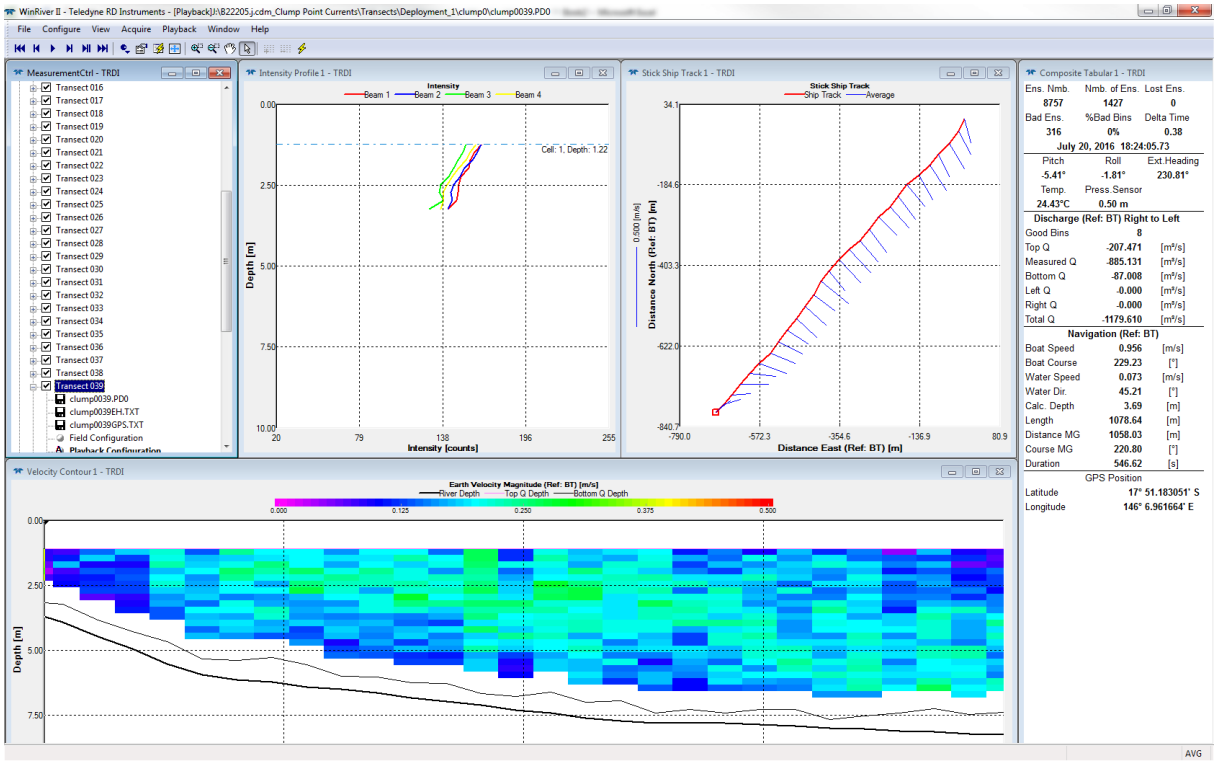
Day 1 Transect 036



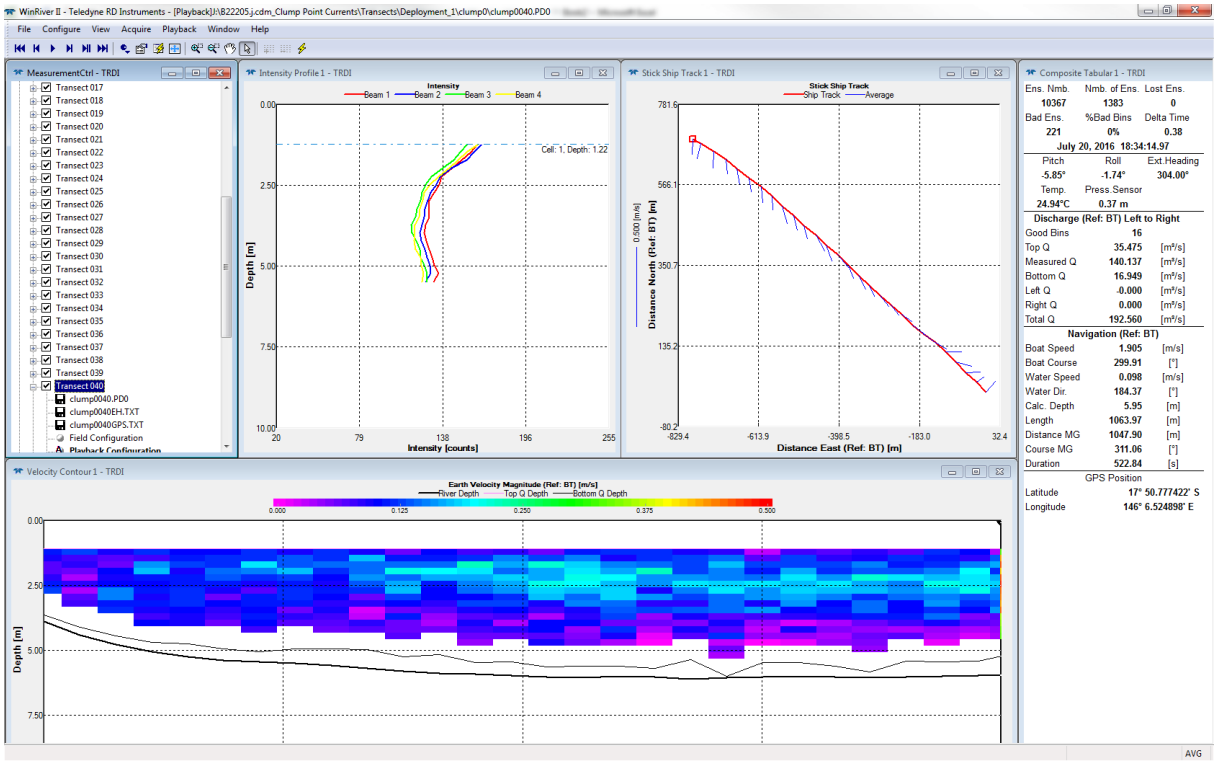
Day 1 Transect 037



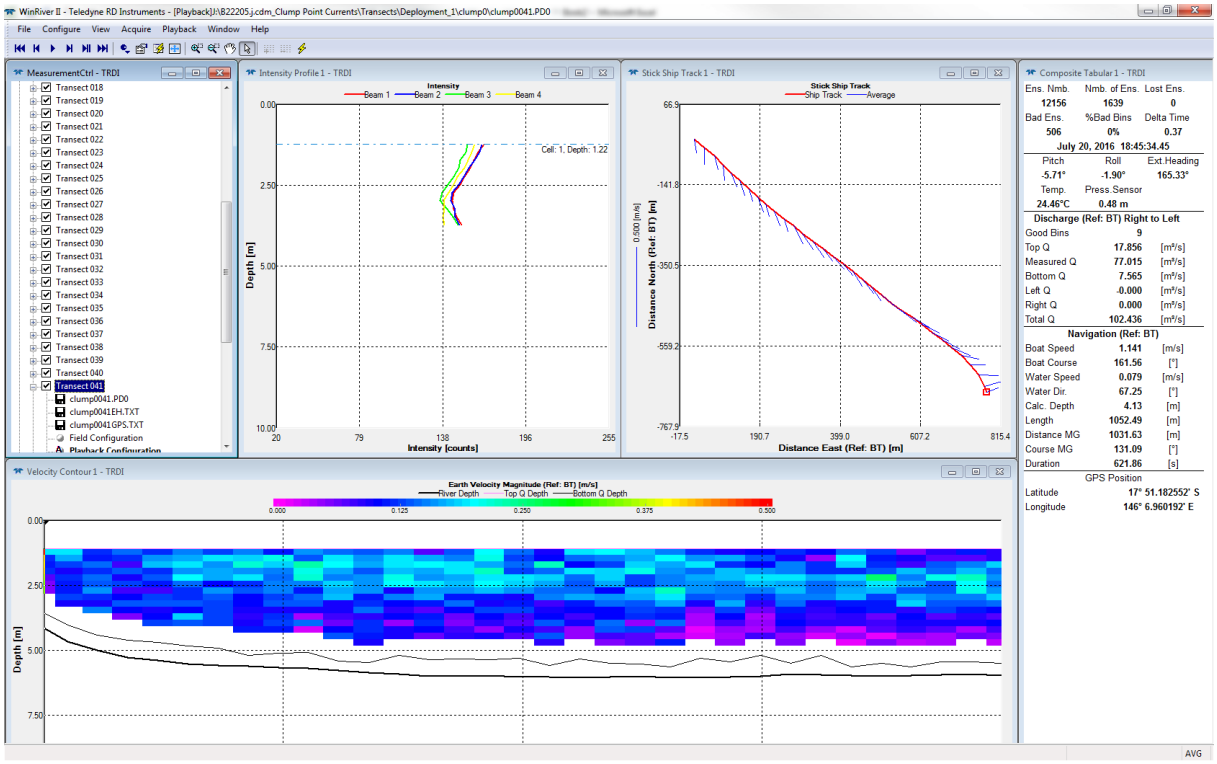
Day 1 Transect 038



Day 1 Transect 039



Day 1 Transect 040



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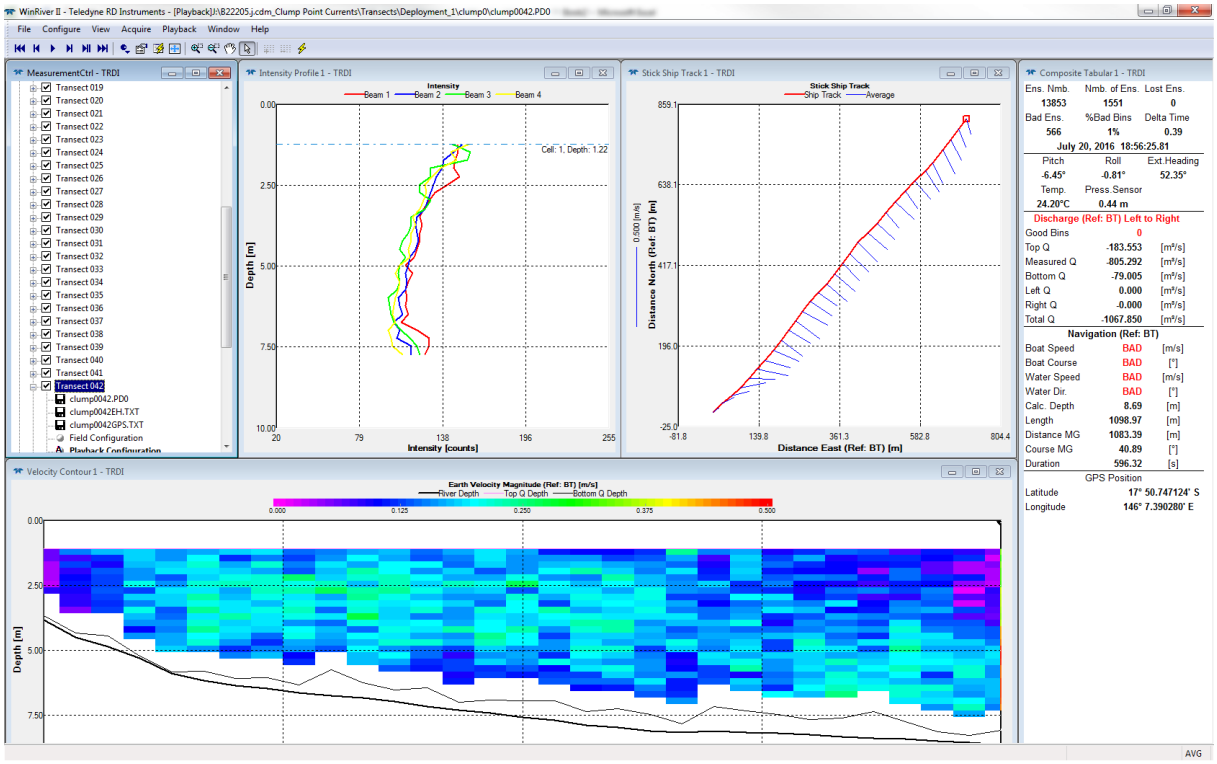
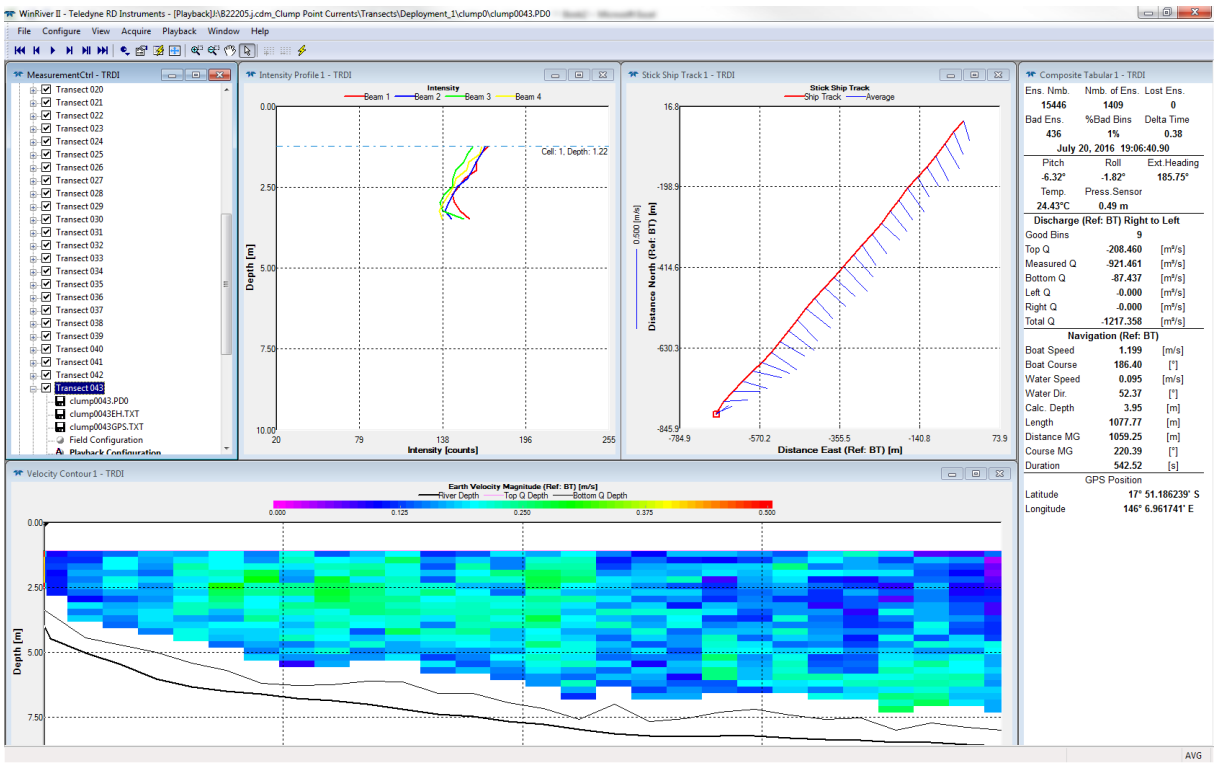
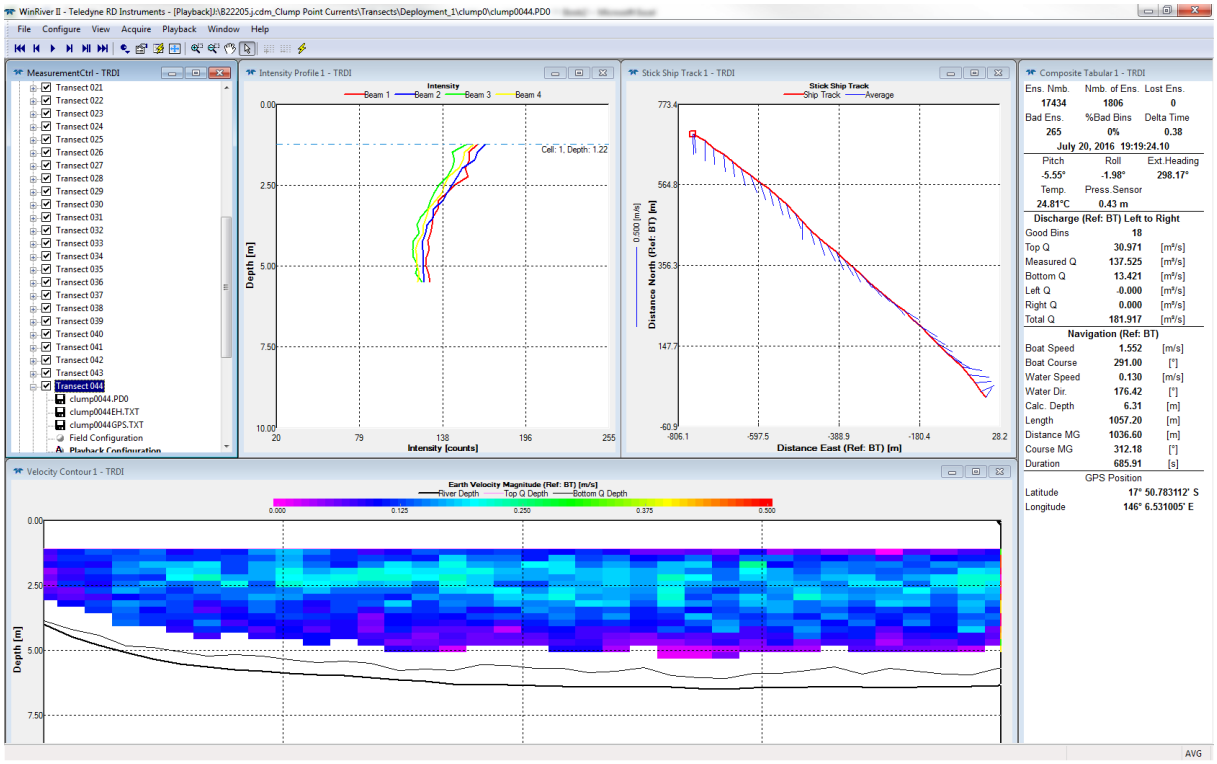


Day 1 Transect 042



Day 1 Transect 043



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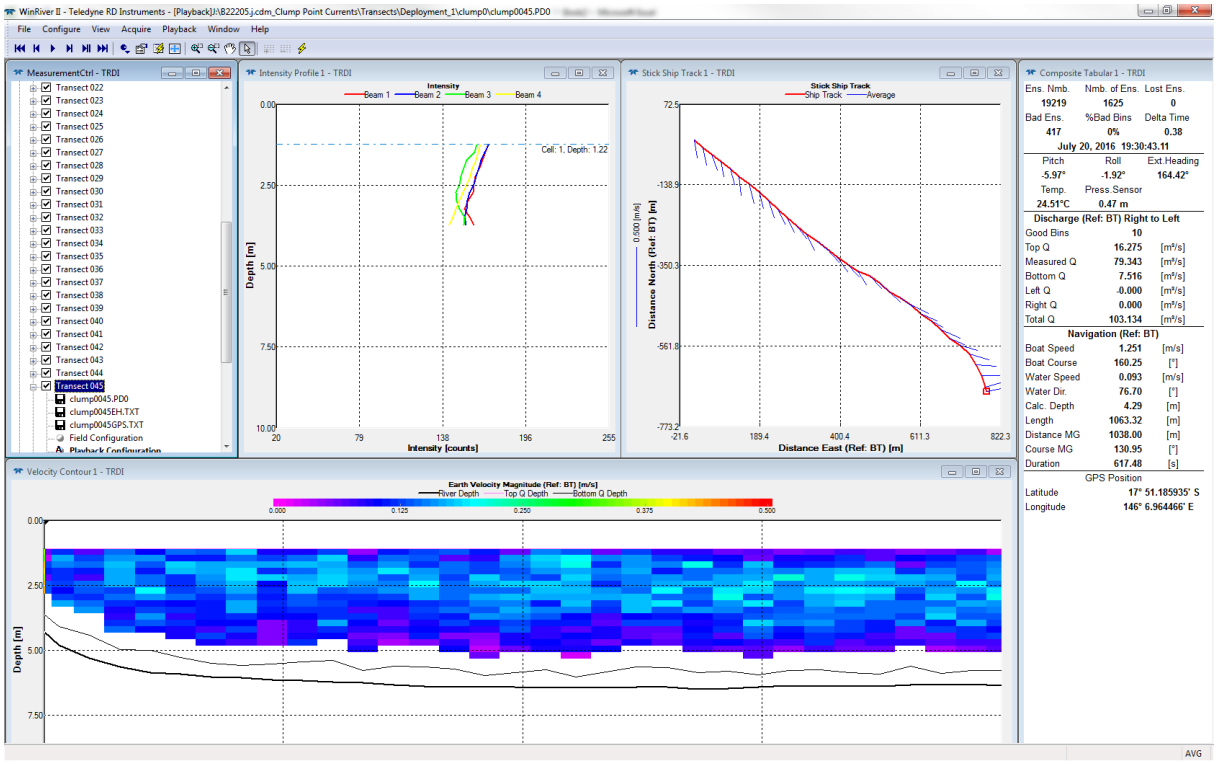
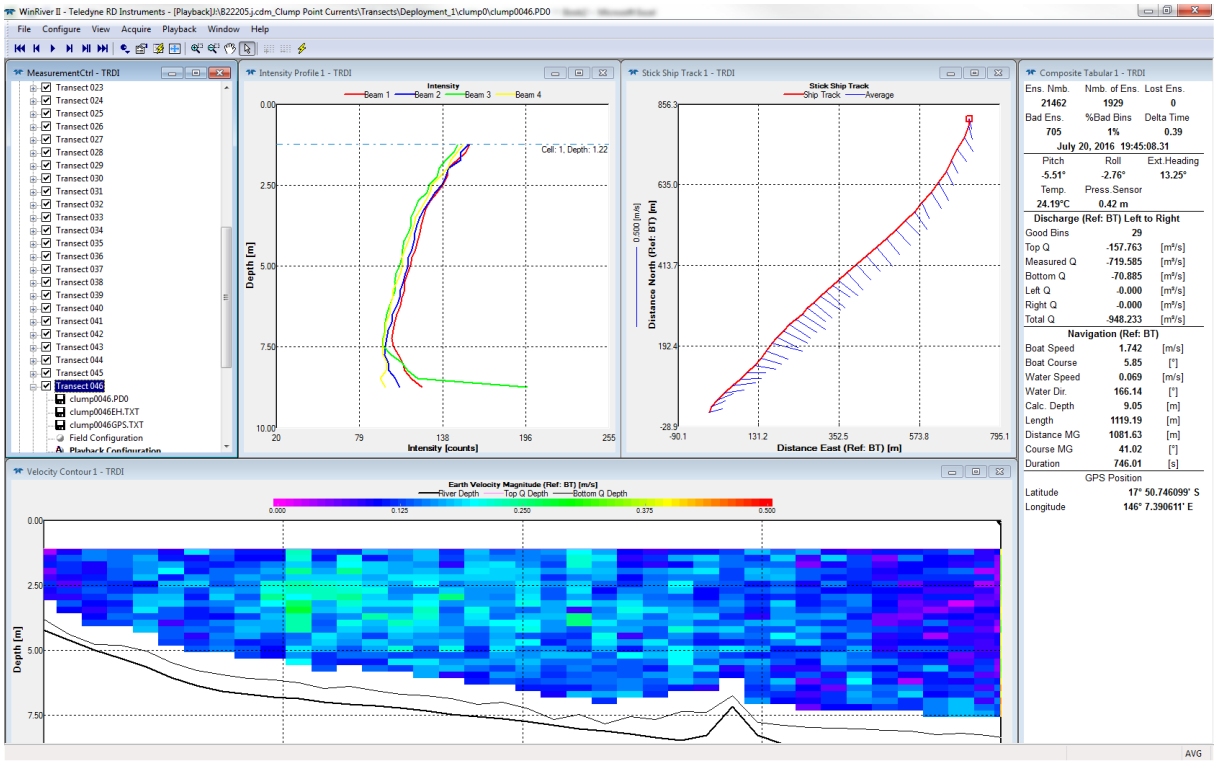
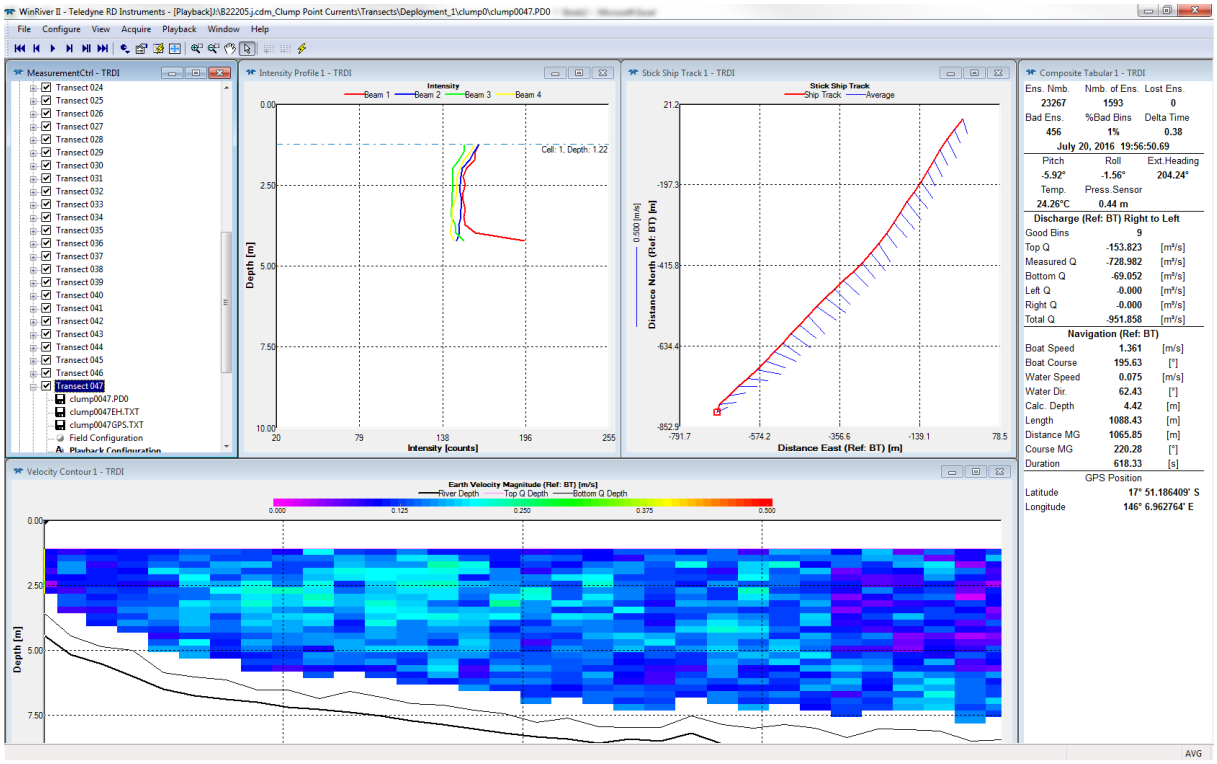


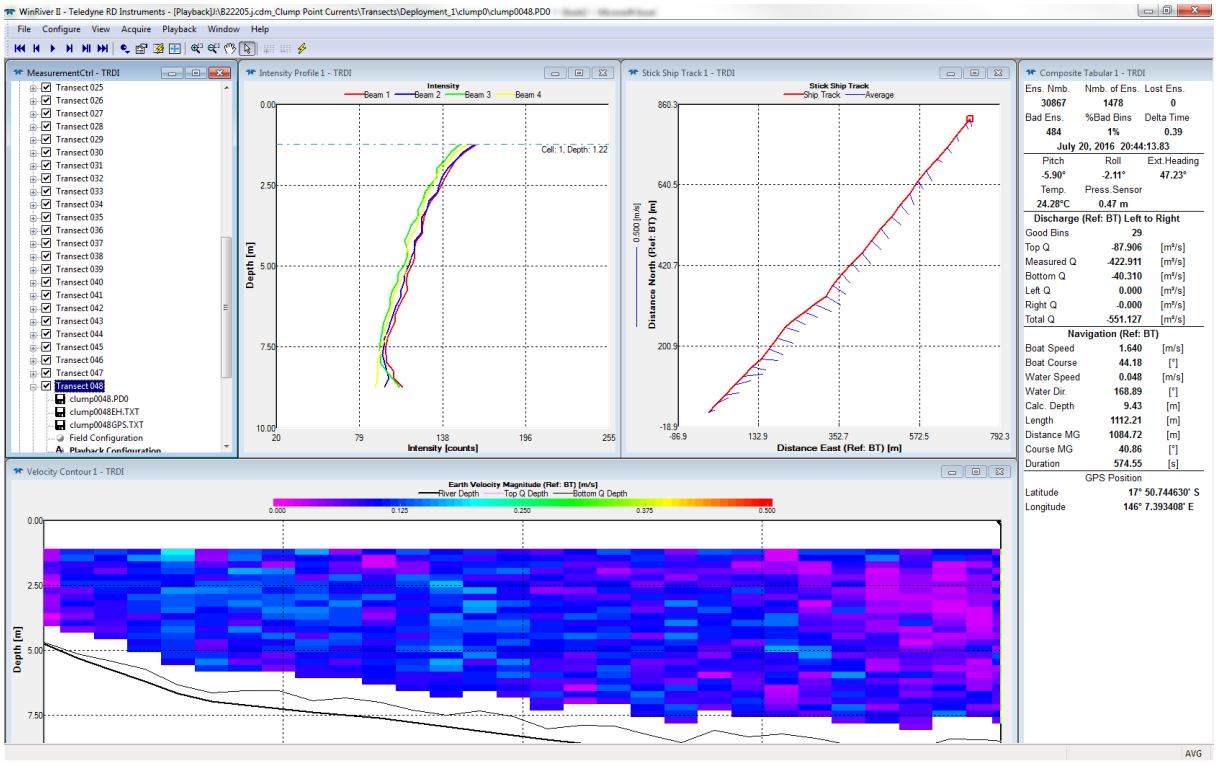
Day 1 Transect 045



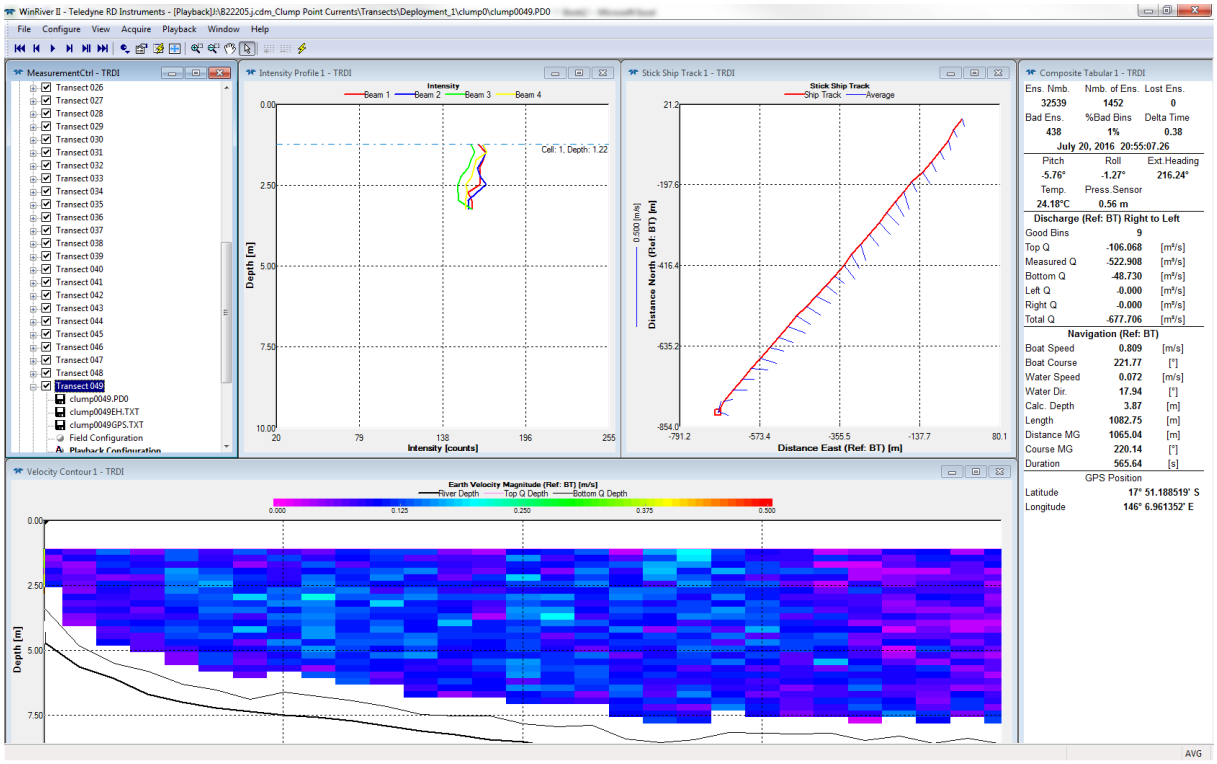
Day 1 Transect 046



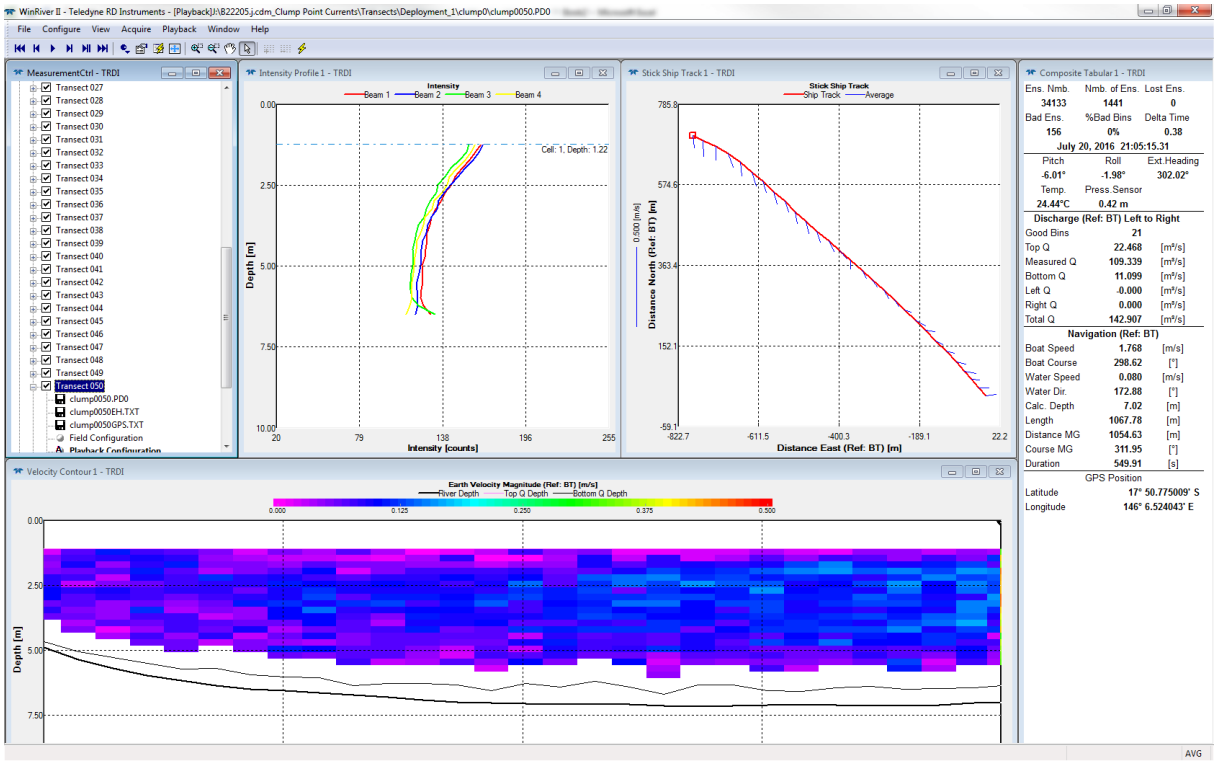
Day 1 Transect 047



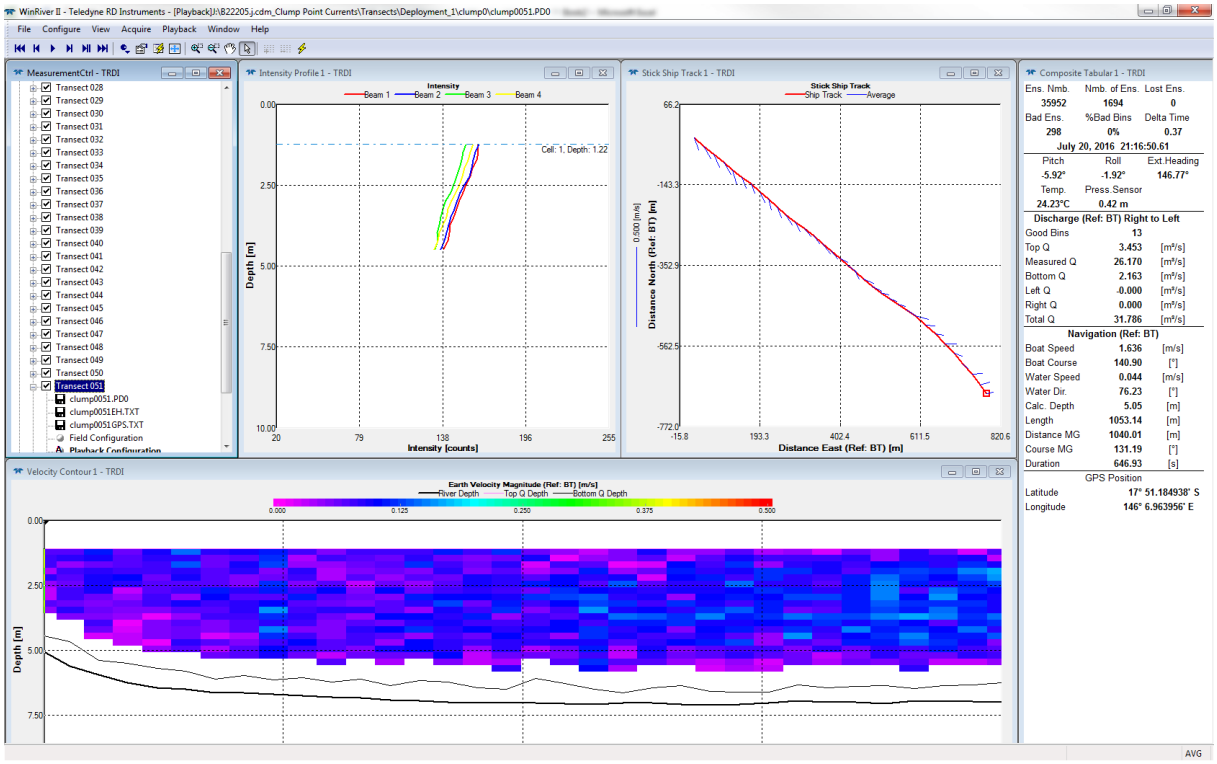
Day 1 Transect 048



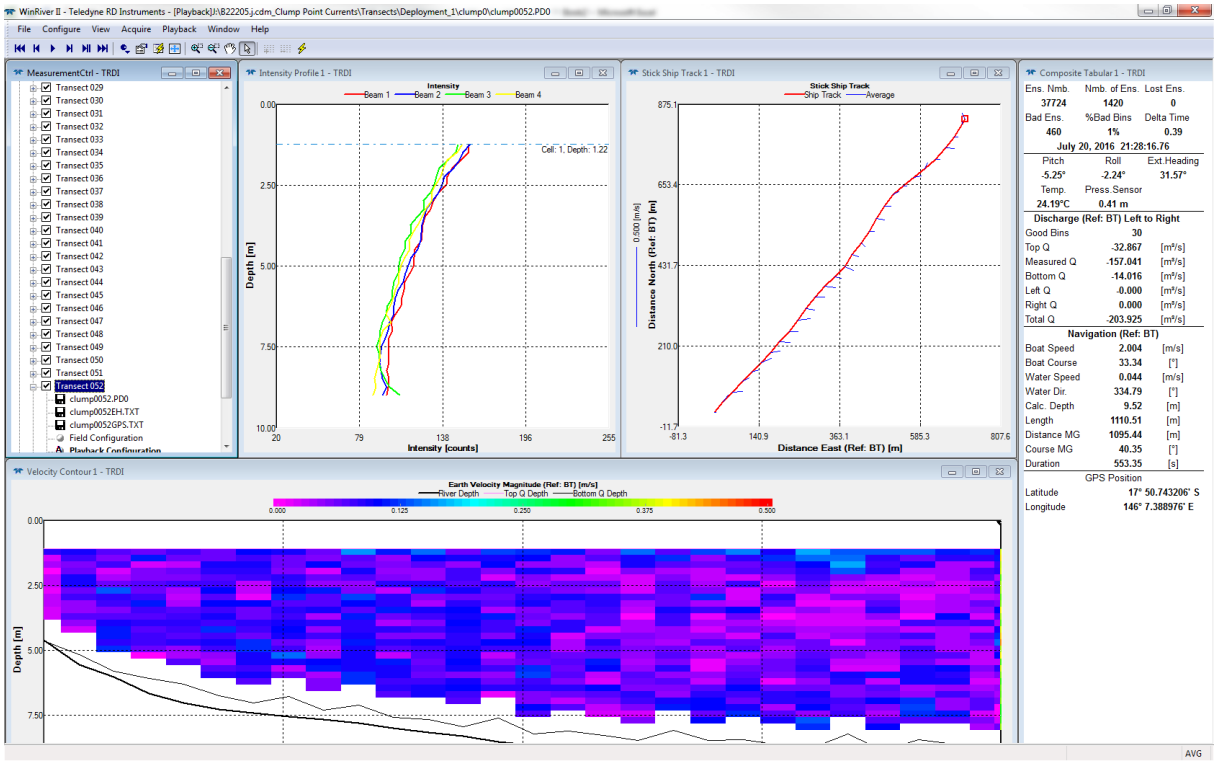
Day 1 Transect 049



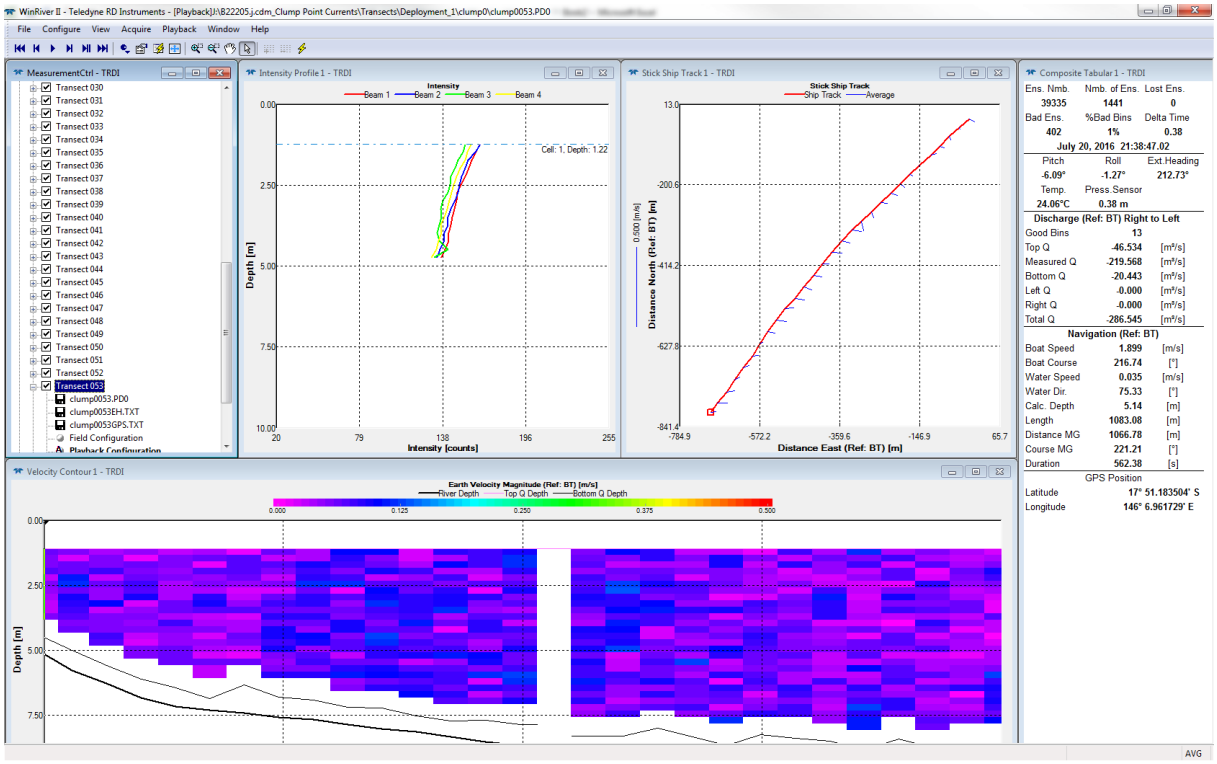
Day 1 Transect 050



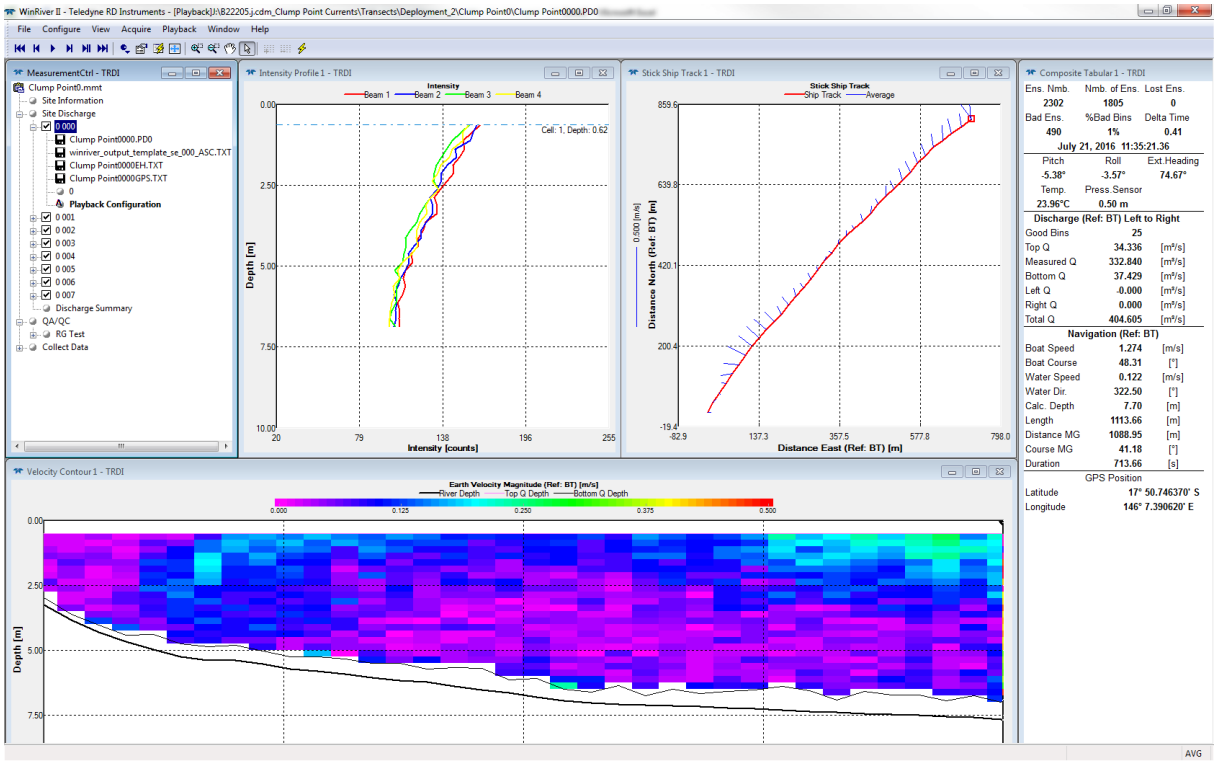
Day 1 Transect 051



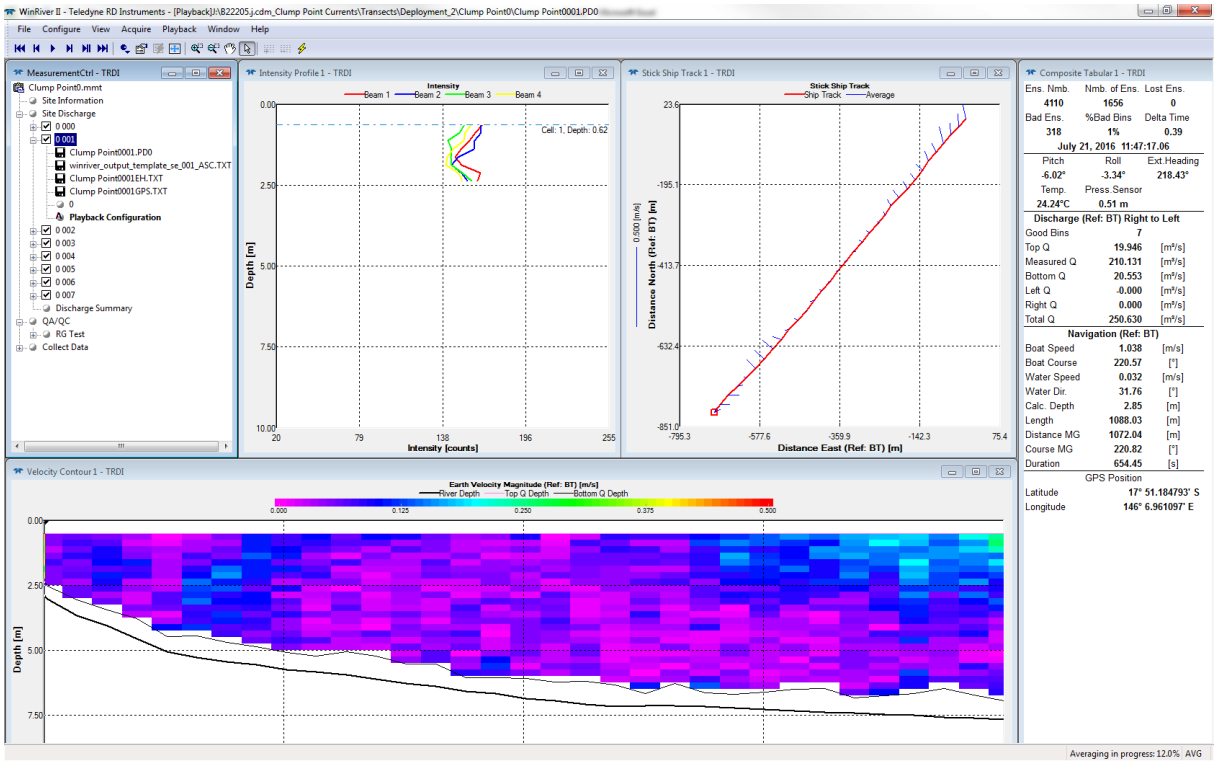
Day 1 Transect 052



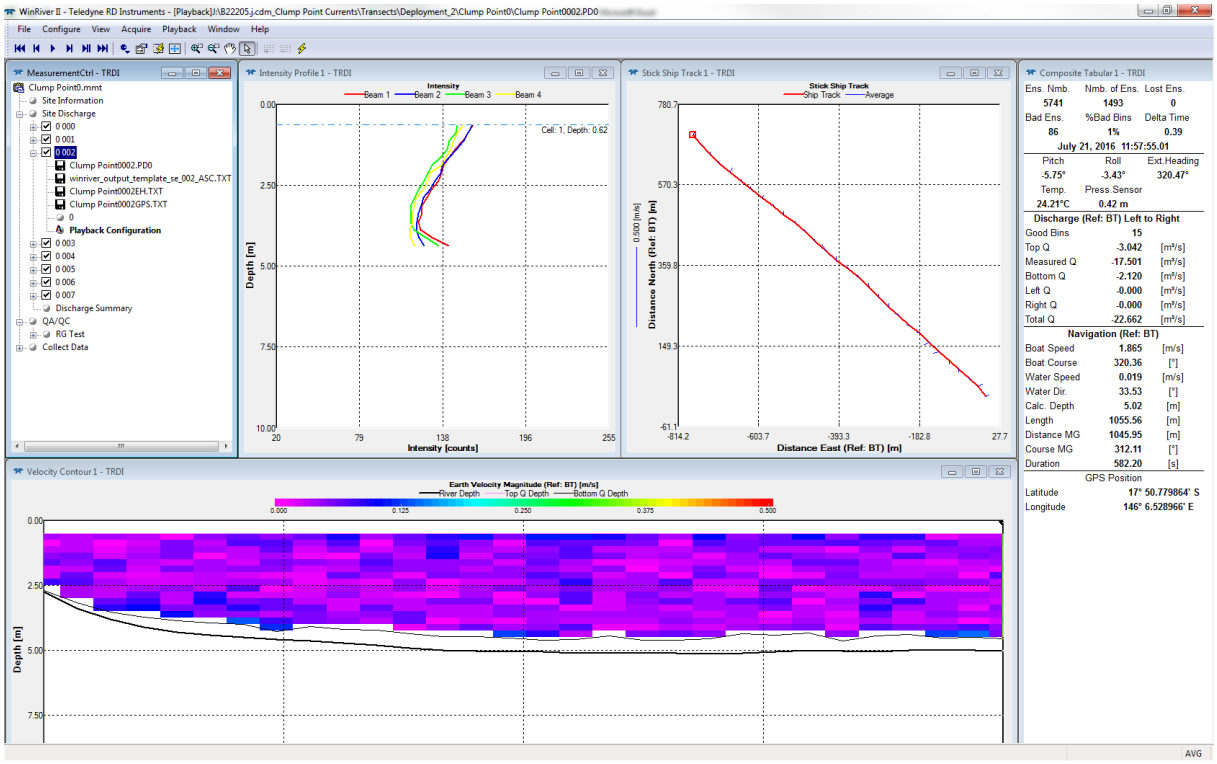
Day 1 Transect 053



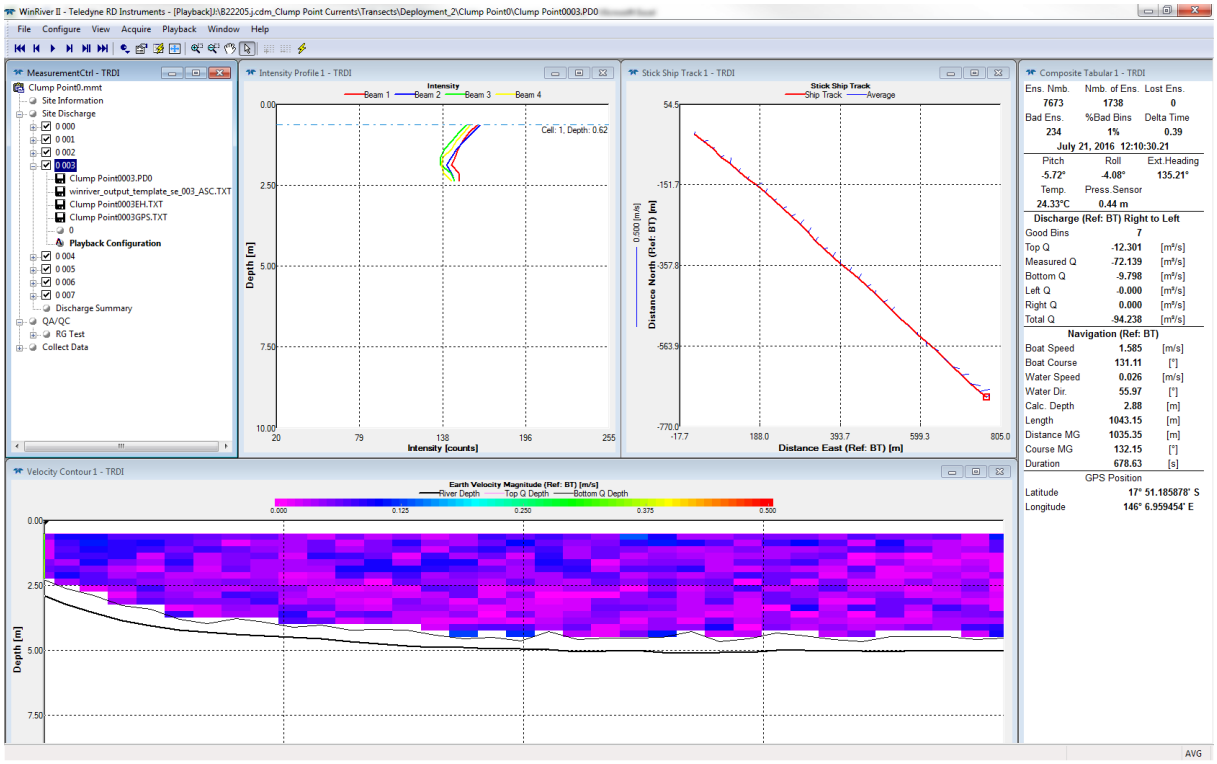
Day 2 Transect 000



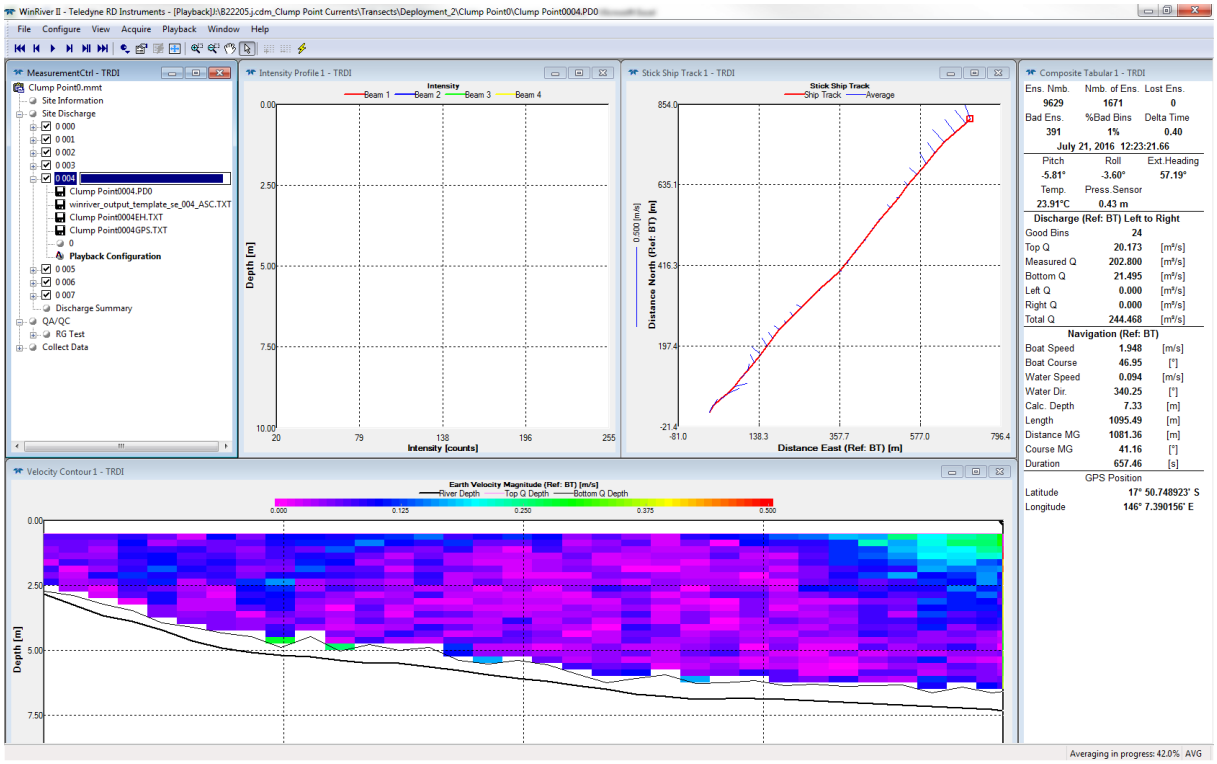
Day 2 Transect 001



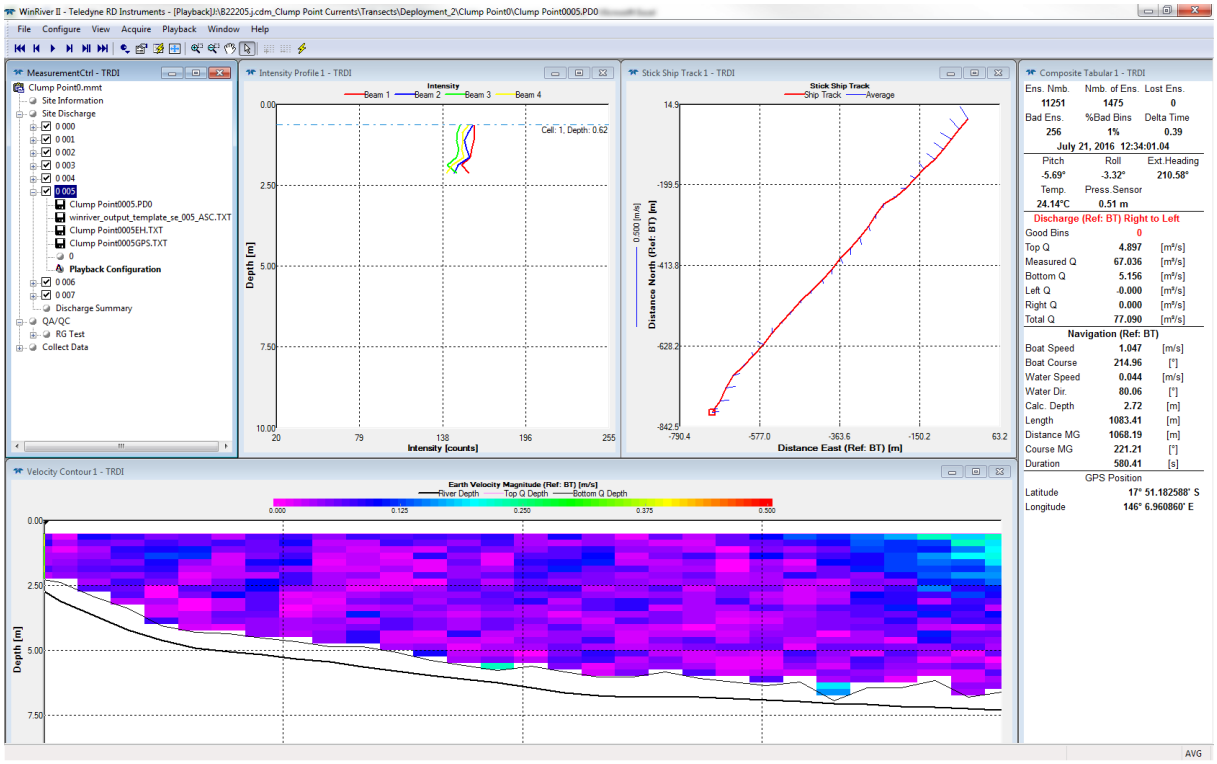
Day 2 Transect 002



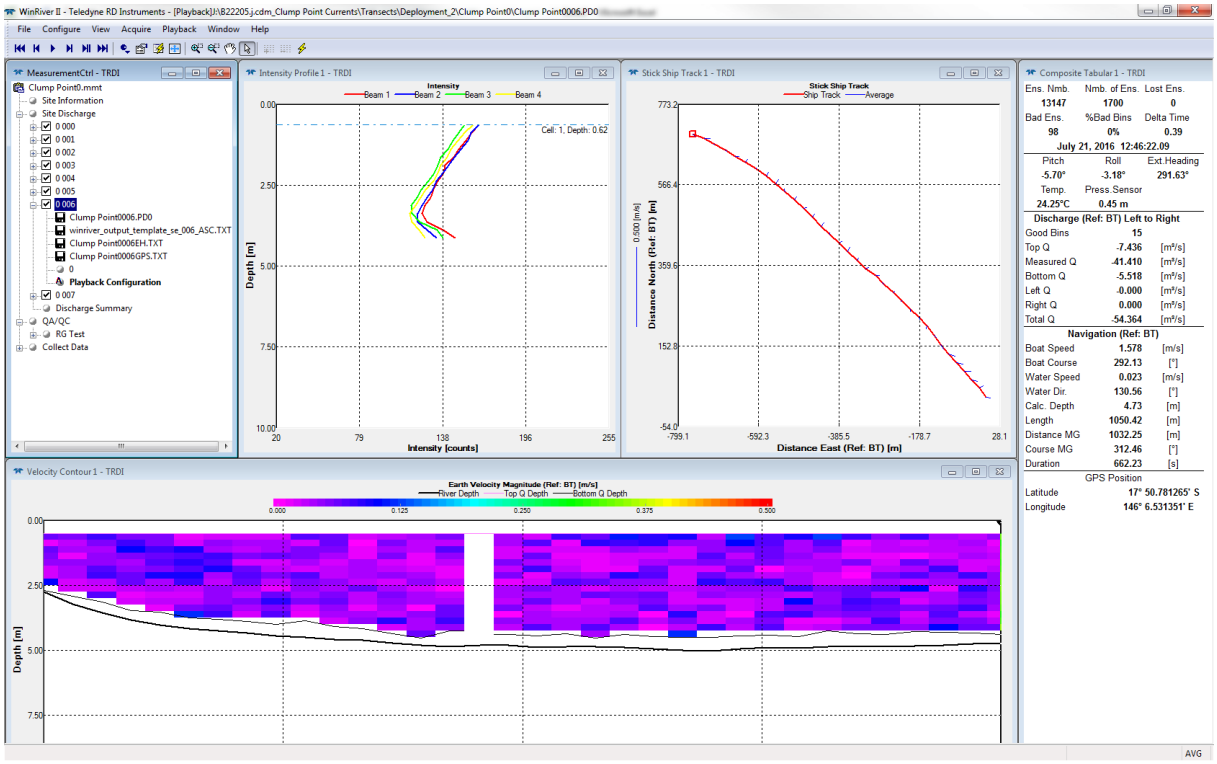
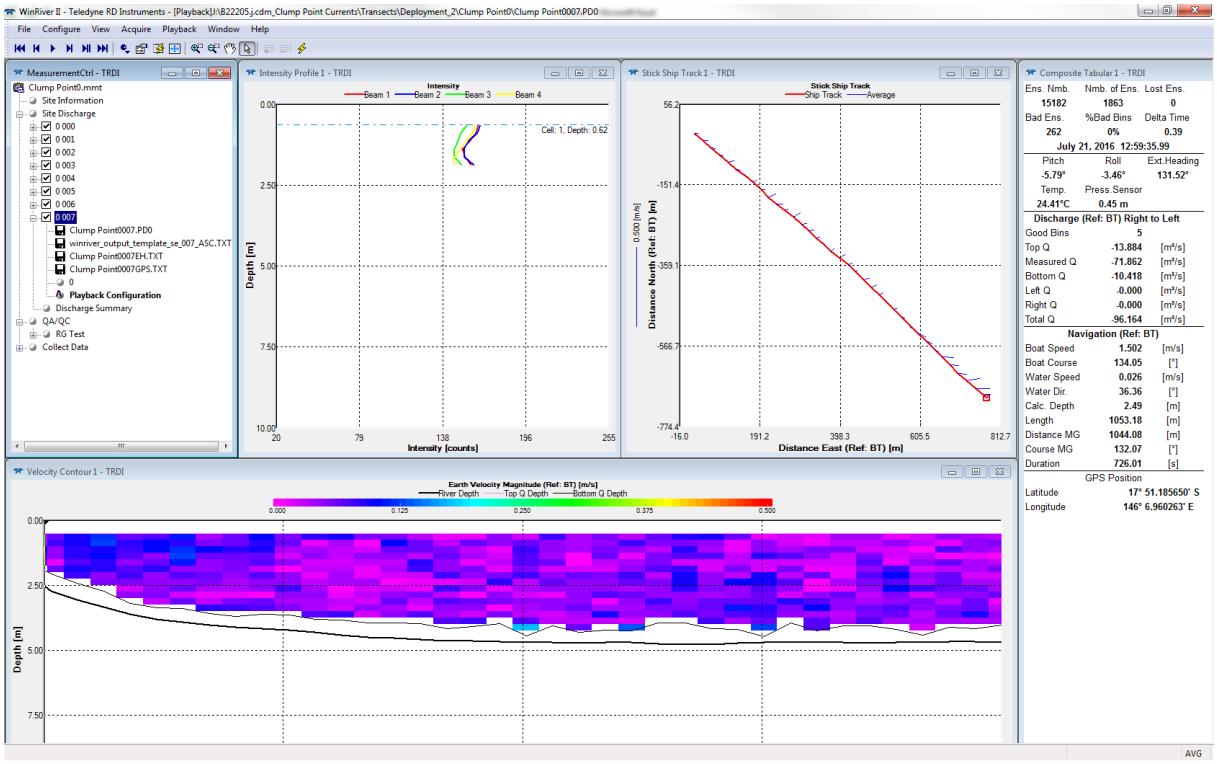
Day 2 Transect 003



Day 2 Transect 004



Day 2 Transect 005



Day 2 Transect 006