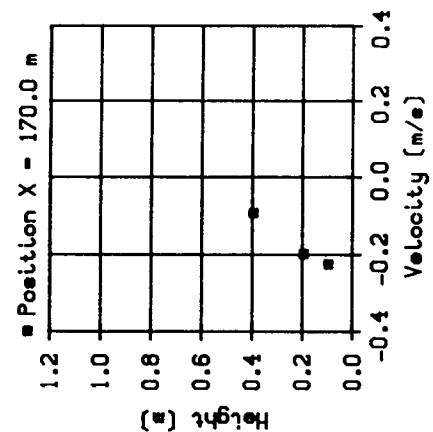
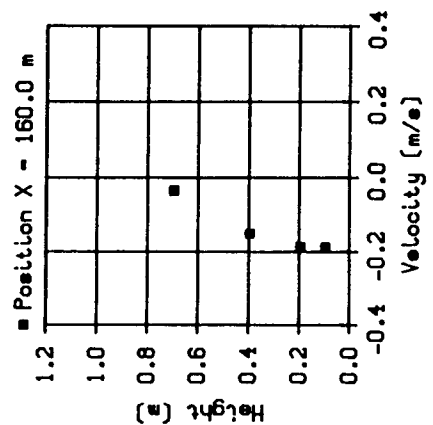
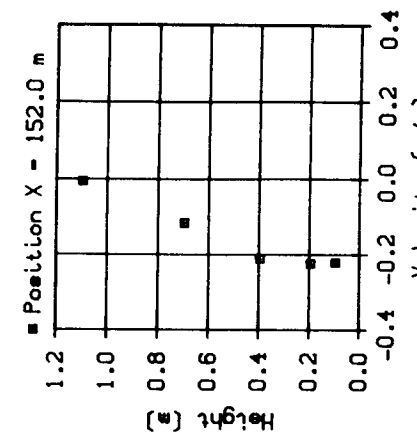
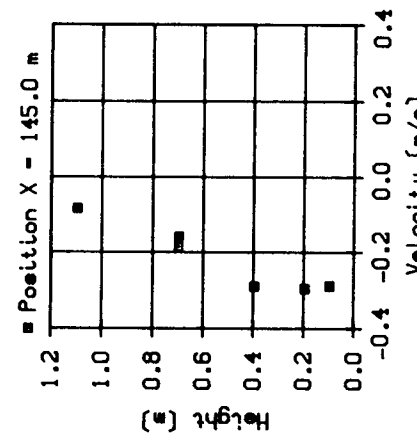
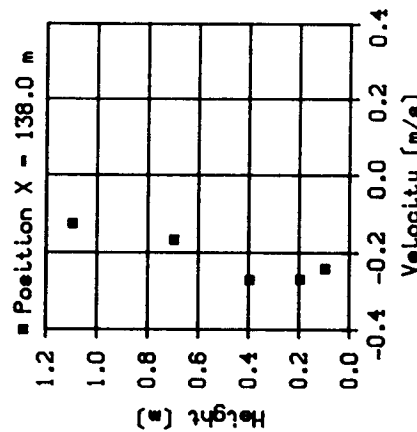
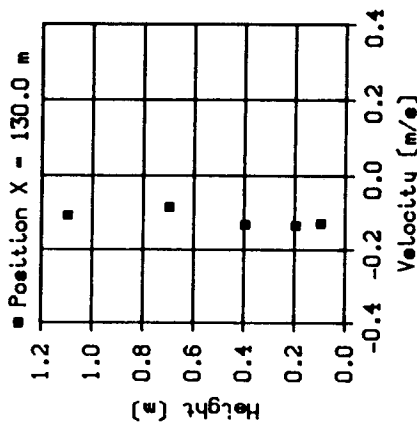
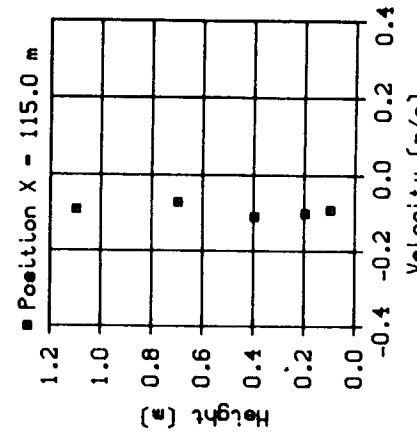
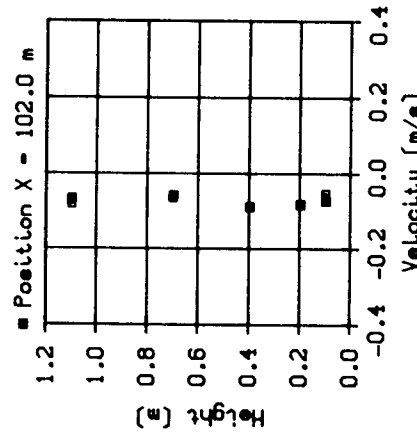
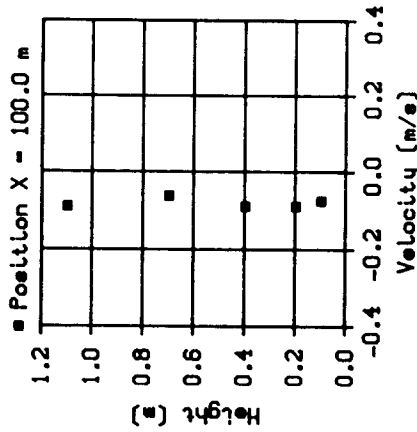
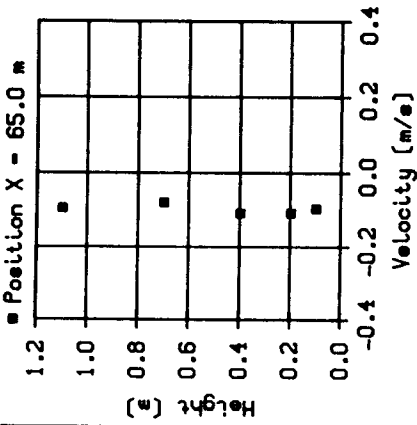


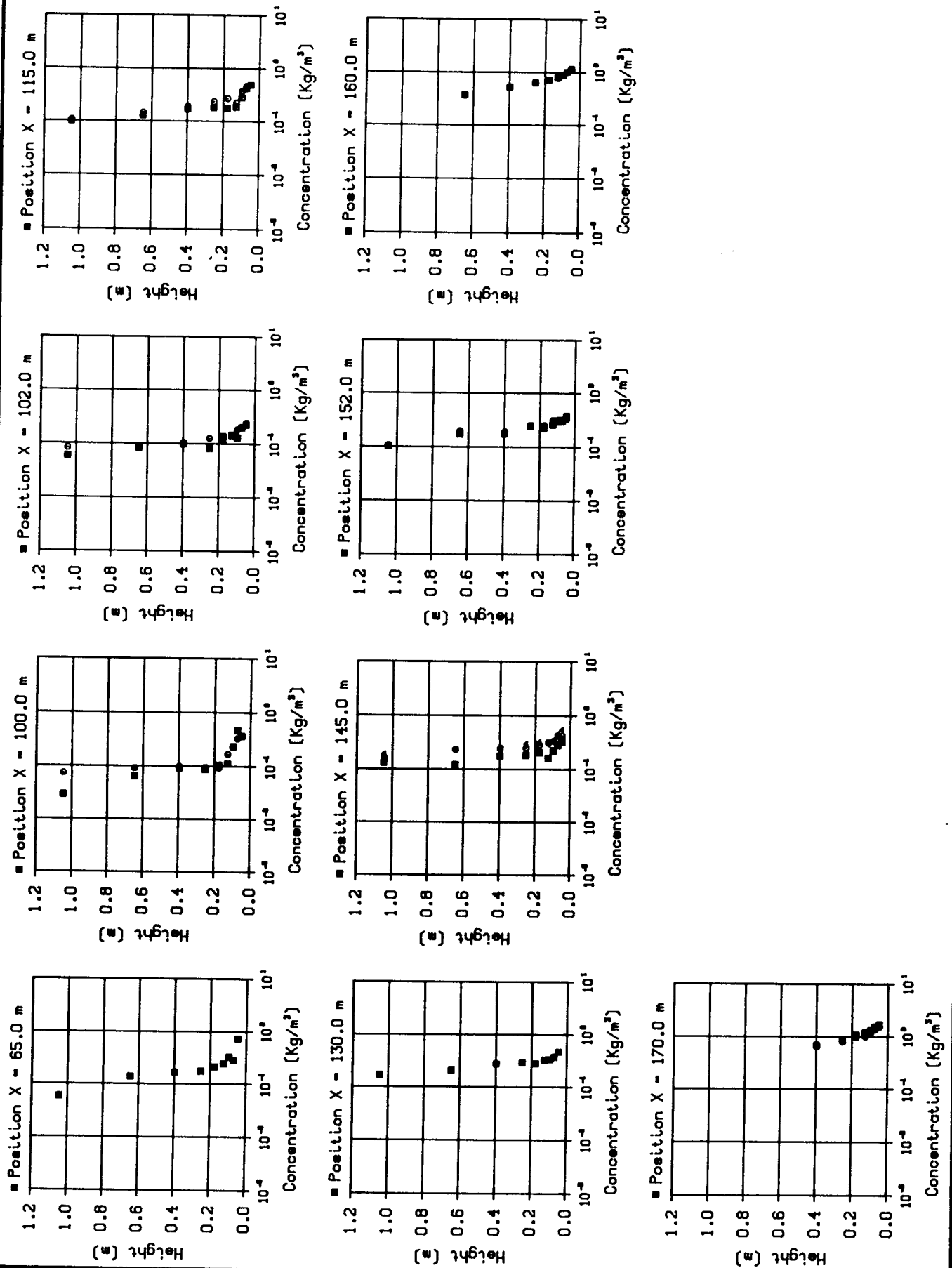
INTEGRAL SURFACE ELEVATION AND VELOCITY DATA  
 BASED ON FIXED INSTRUMENTS, TEST 2E

#2E0809

VELOCITY RESULTS

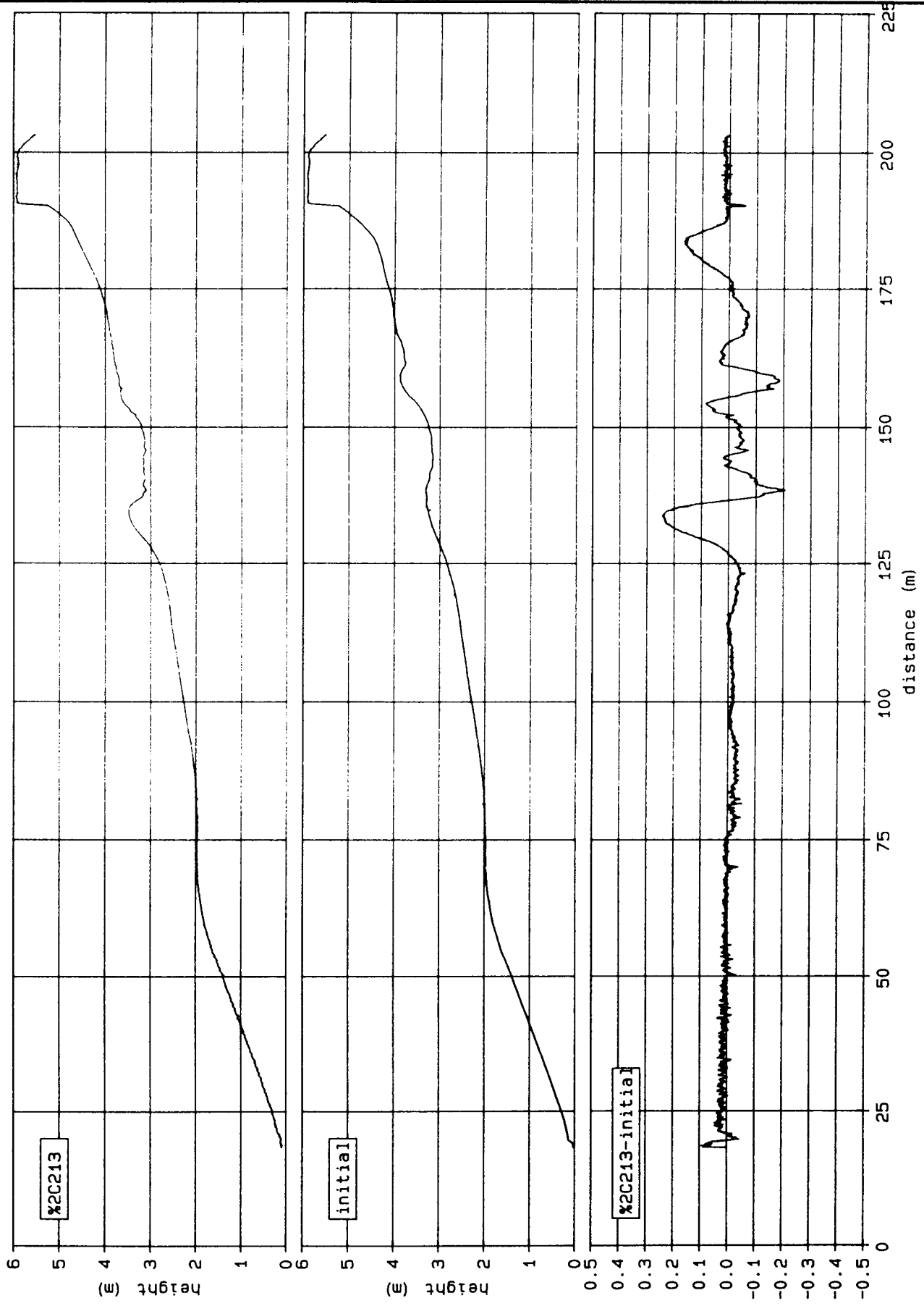


2E



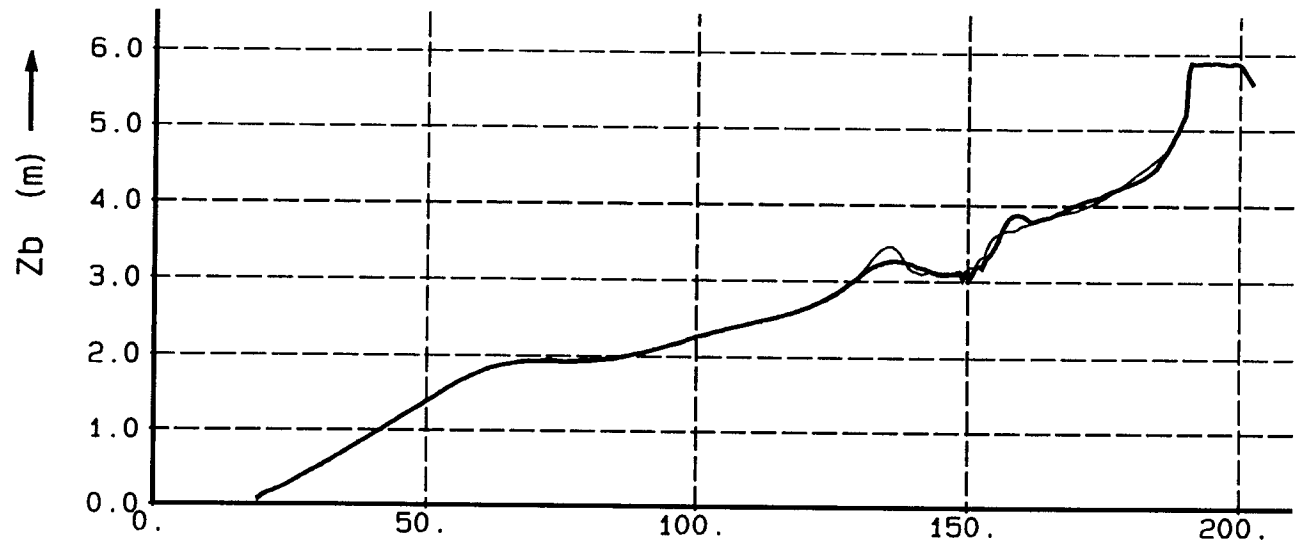
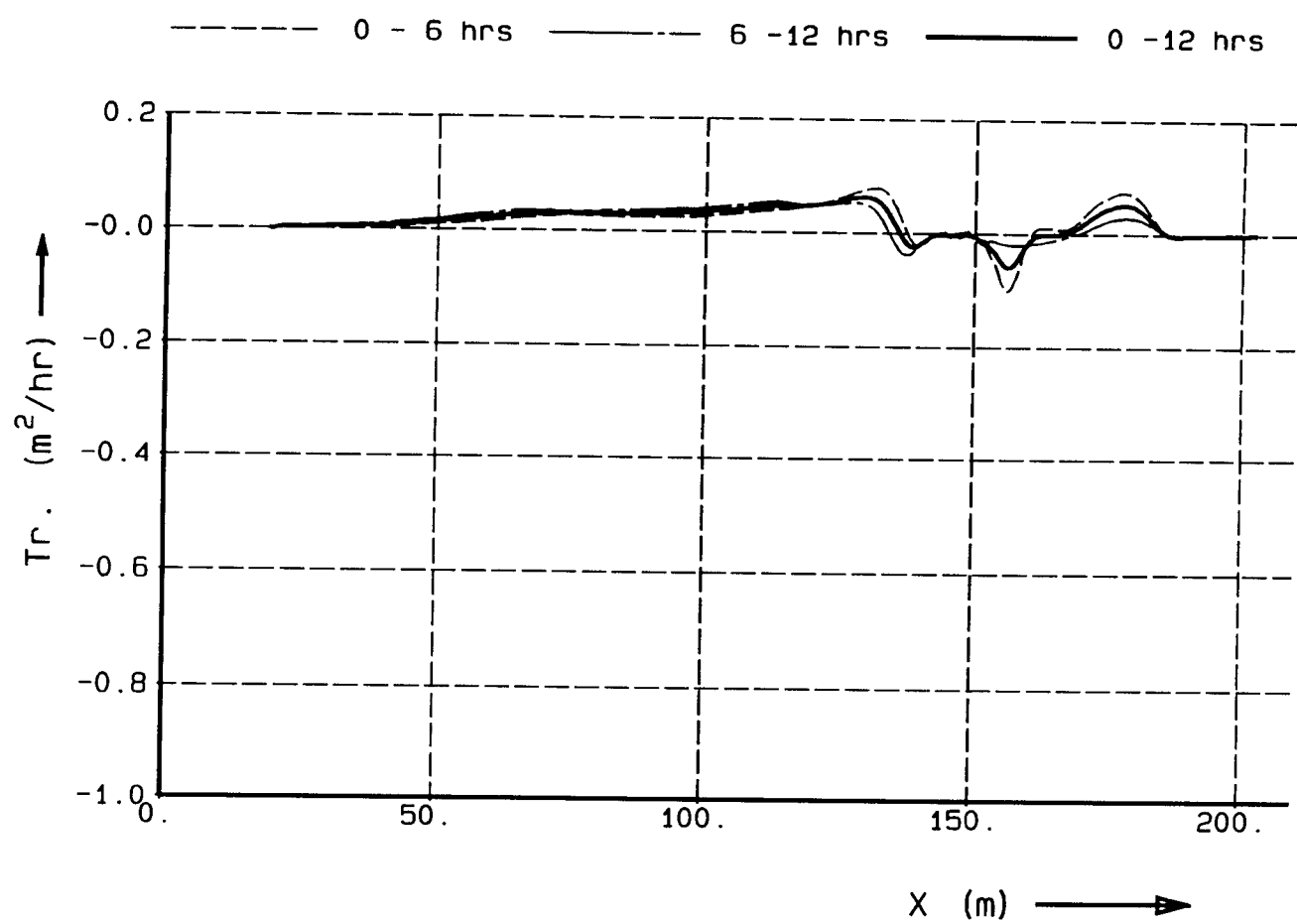
CONCENTRATION RESULTS

2E

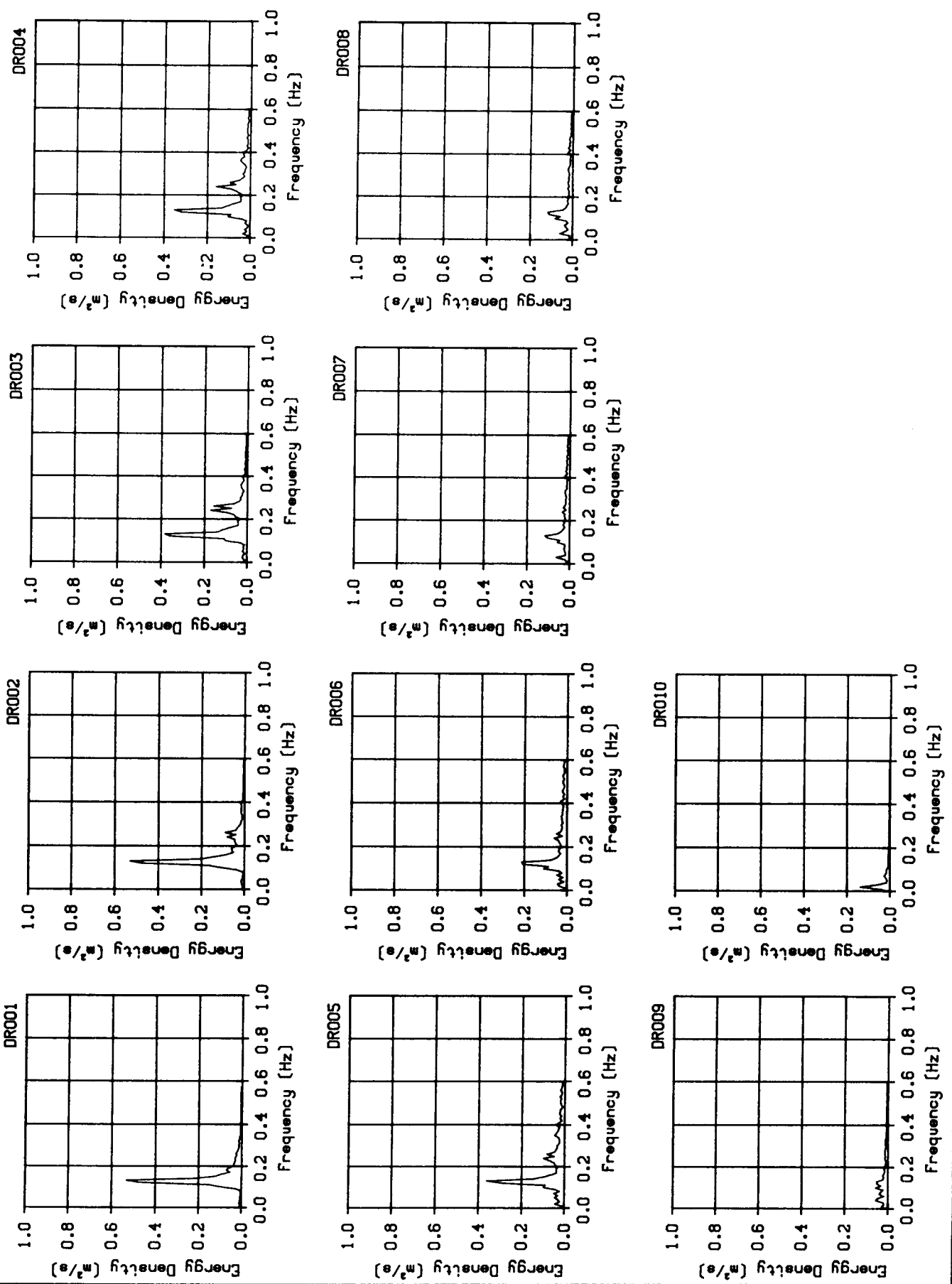


Profile development after 21 hours :  
 line 3 : test 2C

%2C213

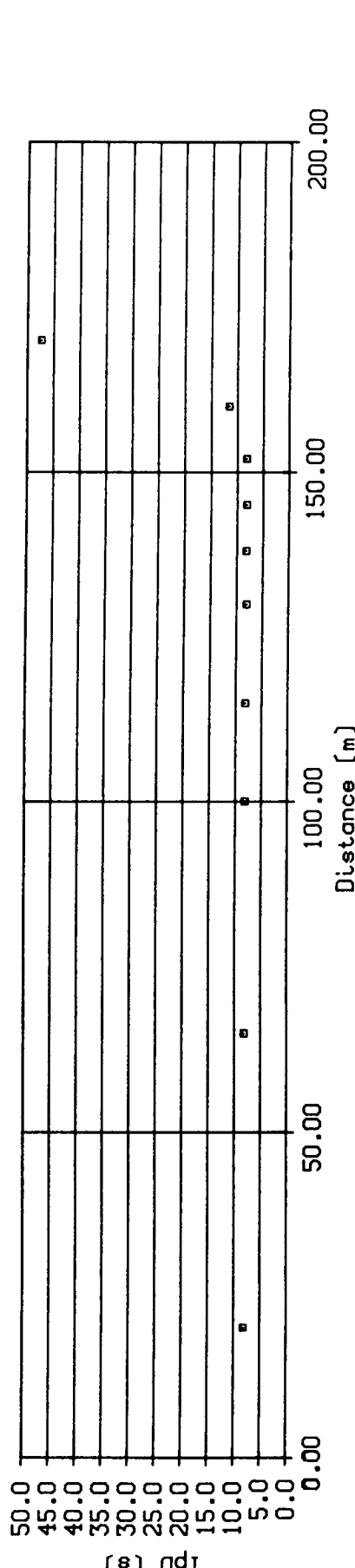
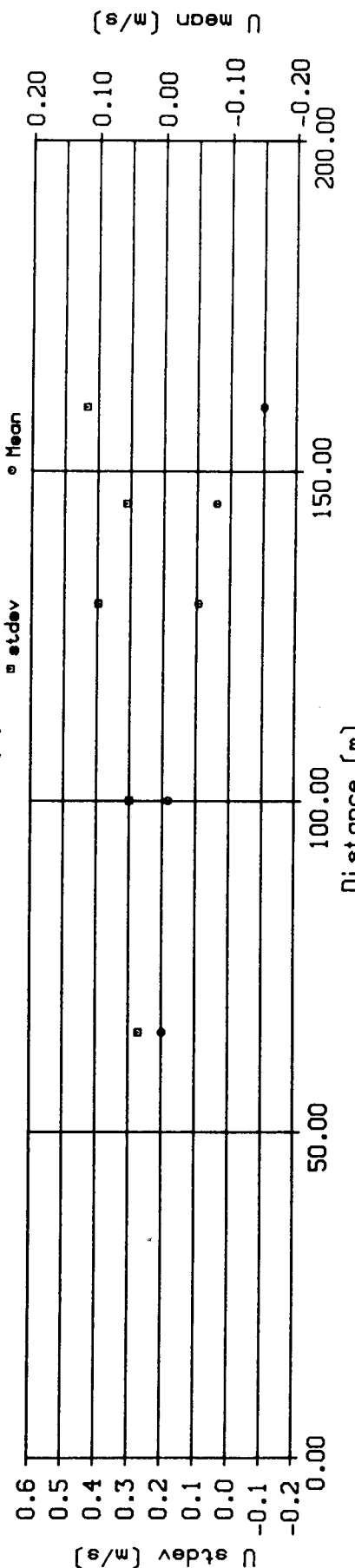
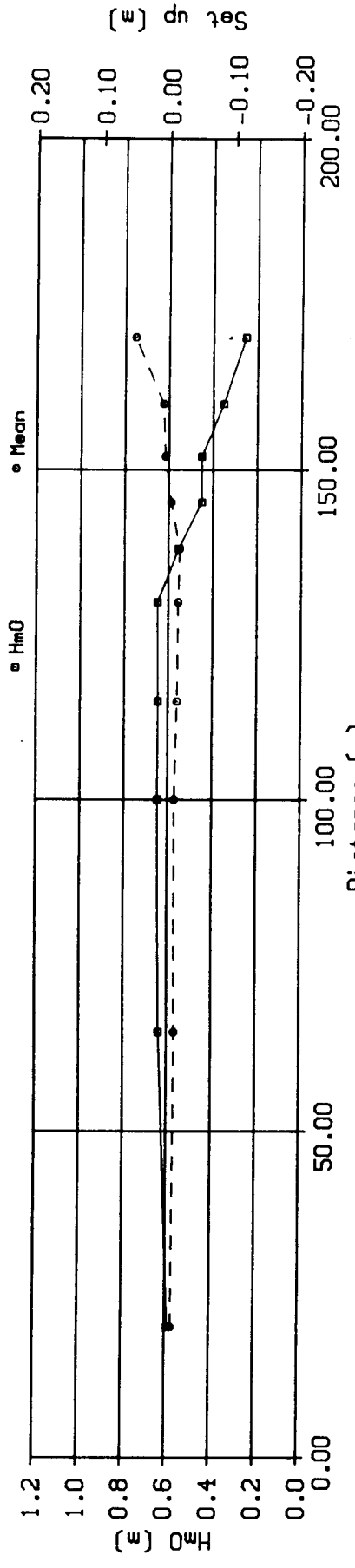


INFERRED TRANSPORT RATES, TEST 2C



SURFACE ELEVATION SPECTRA  
 BASED ON PRESSURE SENSORS

2C0405

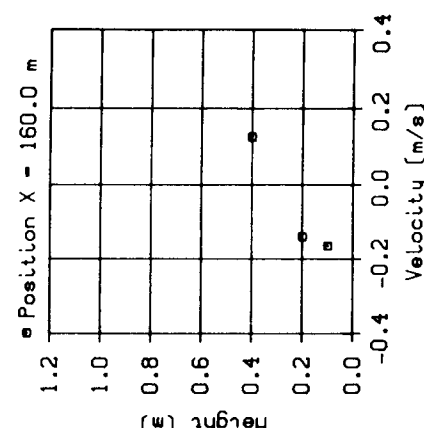
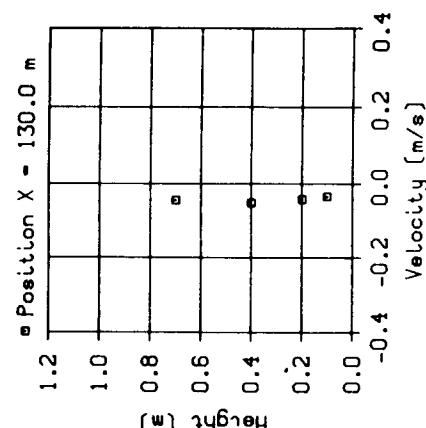
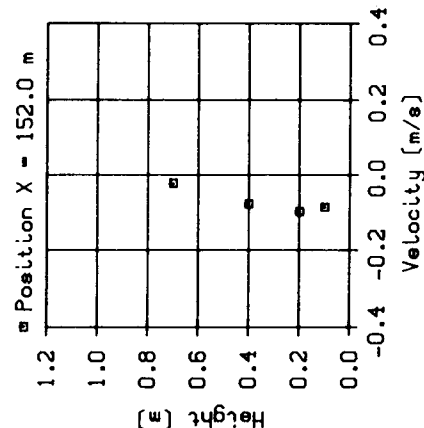
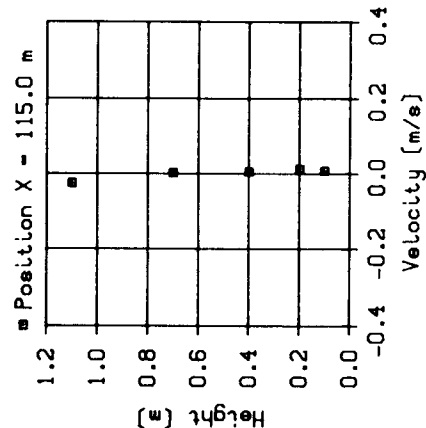
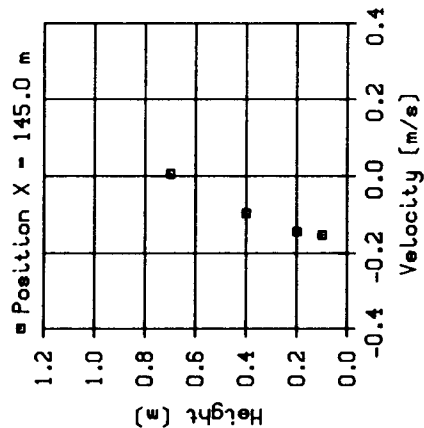
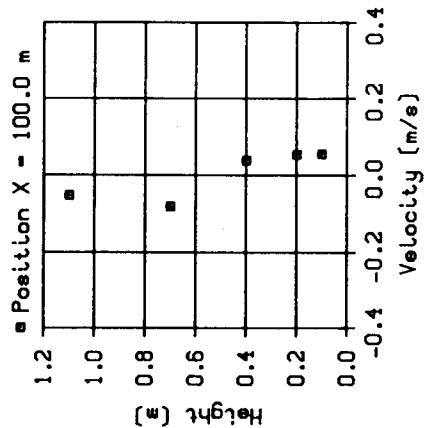
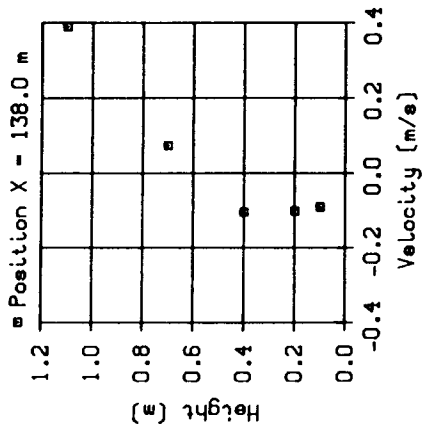
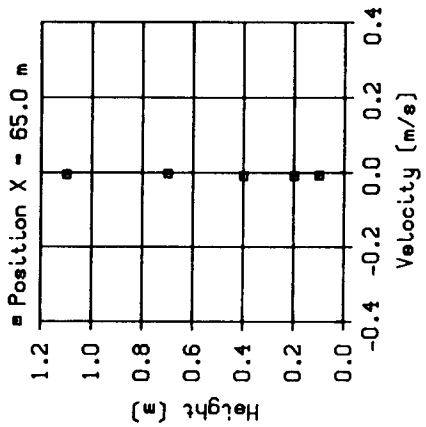


INTEGRAL SURFACE ELEVATION AND VELOCITY DATA  
 BASED ON FIXED INSTRUMENTS, TEST 2C

#2C0405

VELOCITY RESULTS

20





# **Appendix A**

## **Overview of measurements**

**Overview of measurements, Test 1A****Initial profile: design Dean profile with small deviations**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
0		%1A00	5								
1	#1A0102	%1A01	3	65	20	55		1.0	0.80	4.90	4.09
2	#1A0203	%1A02	3	100	20	90		2.0	0.92	4.90	4.11
3	#1A0304	%1A03	3	115	20	40	109	3.0	0.94	4.82	4.08
4	#1A0405	%1A04	3	130	20	40	124	4.0	0.95	4.90	4.10
5	#1A0506	%1A05	3	138	20	40	132	5.0	0.94	4.83	4.10
6	#1A0607	%1A06	3	145	20	40	139	6.0	0.95	4.85	4.11
7	#1A0708	%1A07	3	152	20	40	146	7.0	0.94	4.82	4.085
8	#1A0809			160	20	40	154	8.0	0.94	4.82	4.10
9	#1A0911			156	20	40	150	9.0	0.95	4.82	4.09
10	#1A1012			141	20	40	135	10.0	0.92	4.60	4.085
11	#1A1113			102	20	40	96	11.0	0.93	4.84	4.12
12		%1A12	3					12.0	0.93	4.84	4.12

*Ang/m**1.176**1.238**1.304**1.377**1.450**1.524**1.601**1.680**1.760**1.842**1.927**2.017*

**Overview of measurements, Test 1B**  
**Initial profile: result of Test 1A**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
		%1B00	3								
1	#1B0102	%1B01	3	65				1.0	1.31	4.81	4.09
2	#1B0213	%1B02	3	102			20	2.0	1.31	4.96	4.11
3	#1B0304	%1B03	3	115			20	3.0	1.31	4.96	4.10
4	#1B0405	%1B04	3	130			20	4.0	1.32	4.97	4.11
5	#1B0506	%1B05	3	138			20	5.0	-	-	4.10
6	#1B0607	%1B06	3					6.0	-	-	4.11
7	#1B0707	%1B07	3	145			20	7.0	1.38	5.02	4.11
8	#1B0808	%1B08	3	152			20	8.0	1.39	5.02	4.13
9	#1B0909	%1B09	3	160			20	9.0	1.40	5.02	4.11
10	#1B1010			170			20	10.0	1.39	5.02	4.13
11	#1B1102			65			20	11.0	1.39	5.02	4.12
12	#1B1213	%1B12	3	102			20	12.0	1.39	5.02	4.11
13	#1B1300						20	13.0	1.40	5.02	4.13
14	#1B1400						20	14.0	1.39	5.02	4.12
15	#1B1504			115			20	15.0	1.39	5.02	4.11
16	#1B1605			130			20	16.0	1.40	5.02	4.11
17	#1B1706			138			20	17.0	1.39	5.02	4.10
18		%1B18	3					18.0	1.39	5.02	4.10

Hm0

.3303

.3317

.3315

.3312

-

-

.3353

.3300

.3300

.3346

.3374

.3322

.3390

.3374

.3382

.3406

.3390

.3390

**Overview of measurements, Test 1C**  
**Initial profile: result of Test 1B**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
		%1C00	5								
1	#1C0102	%1C01	3	65	20	40	59	1.0	0.58	7.99	4.10
2	#1C0204	%1C02	3	115	20	40	109	2.0	0.58	7.97	4.13
3	#1C0313	%1C03	3	102	20	40	96	3.0	0.58	7.99	4.12
4	#1C0405	%1C04	3	130	20	40	124	4.0	0.58	7.98	4.11
5	#1C0514			125	20	40	119	5.0	0.58	7.97	4.13
6	#1C0615			134	20	40	128	6.0	0.58	7.98	4.12
7	#1C0706	%1C07	3	138	20	40	132	7.0	0.58	7.97	4.11
8	#1C0807			145	20	40	139	8.0	0.58	7.97	4.13
9	#1C0908			152	20	40	146	9.0	0.58	7.98	4.12
10	#1C1009	%1C10	3	160	20	40	154	10.0	0.58	7.97	4.12
11	#1C1110			170	20	40	164	11.0	0.58	7.97	4.12
12	#1C1200				80	125	138	12.0	0.58	7.97	4.11
13	#1C1300	%1C13	5		80	125	145	13.0	0.58	7.97	4.10

2.1915

2.1908

2.1907

2.1908

2.1908

2.1908

2.1907

2.1909

2.1908

2.1908

2.1908

2.1911

2.1915

**Overview of measurements, Test 2B**  
**Initial profile: result of Test 2A**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
		%2B00	5								
1	#2B0102	%2B01	3	65			59	1.0	1.41	5.02	4.12
2	#2B0203	%2B02	3	100			20	2.0	1.42	5.02	4.14
3	#2B0304	%2B03	3	115			109	3.0	1.40	5.02	4.13
4	#2B0405	%2B04	3	130			124	4.0	1.41	5.02	4.11
5	#2B0506	%2B05	3	138			132	5.0	1.41	5.02	4.10
6	#2B0607	%2B06	3	145			139	6.0	1.41	5.03	4.11
7	#2B0708	%2B07	3	152			146	7.0	1.42	5.03	4.13
8	#2B0809	%2B08	3	160			154	8.0	1.41	5.03	4.13
9	#2B0910			170			164	9.0	1.41	5.02	4.12
10	#2B1002			65			59	10.0	1.41	5.03	4.11
11	#2B1100							11.0	1.41	5.03	4.11
12	#2B1200	%2B12	5					12.0	1.41	5.03	4.10

**Overview of measurements, Test 2E**  
**Initial profile: result of Test 2B**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
		%2E00	5								
1	#2E0102	%2E01	3	65			59	1.0	1.44	5.03	4.62
2	#2E0203	%2E02	3	100			94	2.0	1.42	5.03	4.61
3	#2E0304	%2E03	3	115			109	3.0	1.42	5.03	4.60
4	#2E0405	%2E04	3	130			124	4.0	1.43	5.03	4.63
5	#2E0506	%2E05	3	138			132	5.0	1.42	5.00	4.60
6	#2E0607	%2E06	3	145			139	6.0	1.42	5.03	4.61
7	#2E0708	%2E07	3	152			146	7.0	1.42	5.03	4.62
8	#2E0809	%2E08	3	160			154	8.0	1.43	5.03	4.61
9	#2E0910	%2E09	3	170			164	9.0	1.43	5.03	4.61
10	#2E1007	%2E10	3	145			20	10.0	1.43	5.03	4.62
11	#2E1113			102			96	11.0	1.43	5.03	4.61
12	#2E1213	%2E12	3	102			96	12.0	1.43	5.03	4.62
13	#2E1300							13.0	1.43	5.03	4.63
14	#2E1400							14.0	1.43	5.03	4.62
15	#2E1500							15.0	1.44	5.02	4.61
16	#2E1600							16.0	1.43	5.02	4.60
17	#2E1700							17.0	1.43	5.02	4.62
18	#2E1800	%2E18	5					18.0	1.43	5.02	4.61

**Overview of measurements, Test 2C****Initial profile: result of Test 2E**

No.	Test code	Profile code	No. profiles	X carriage (m)	X WHM01 (m)	X WHM02 (m)	X WHM03 (m)	Wave hours	Hm0 (20m) (m)	Tp (sec)	W.L. (m)
		%2C00	5								
1	#2C0102			65	20	40	59	1.0	0.58	7.92	4.12
2	#2C0203			100	20	40	94	2.0	0.58	7.92	4.11
3	#2C0304	%2C03	3	115	20	40	109	3.0	0.58	7.93	4.10
4	#2C0405			130	20	40	124	4.0	0.59	7.93	4.12
5	#2C0506			138	20	40	132	5.0	0.58	7.94	4.11
6	#2C0607	%2C06	3	145	20	40	139	6.0	0.58	7.94	4.10
7	#2C0708			152	20	40	146	7.0	0.59	7.94	4.13
8	#2C0809			160	20	40	154	8.0	0.58	7.94	4.13
9	#2C0900				20	40	154	9.0	0.58	7.95	4.13
10	#2C1000				20	40	154	10.0	0.59	7.95	4.13
11	#2C1100				20	40	60	11.0	0.58	7.95	4.12
12	#2C1200	%2C12	3		20	40	60	12.0	0.58	7.95	4.11
18	#2C2100	%2C21	5		20	40	60	21.0	0.59	7.90	4.12

## **Appendix B**

**Analysis of errors in the conversion of pressure spectra  
to surface elevation spectra**



### Analysis of errors in the conversion of pressure spectra to surface elevation spectra

The significant wave height was obtained from the measurements performed with the pressure sensors and the three wave gauges. In the first case time series obtained with the pressure sensor were used to compute the pressure spectrum. Next a transfer function was used to transform the pressure spectrum into a surface elevation spectrum. This may introduce some small errors in the significant wave height. The process used to obtain the significant wave height and the magnitude of the possible errors is described below.

A typical example of a layout for a pressure sensors is shown in Figure B1.

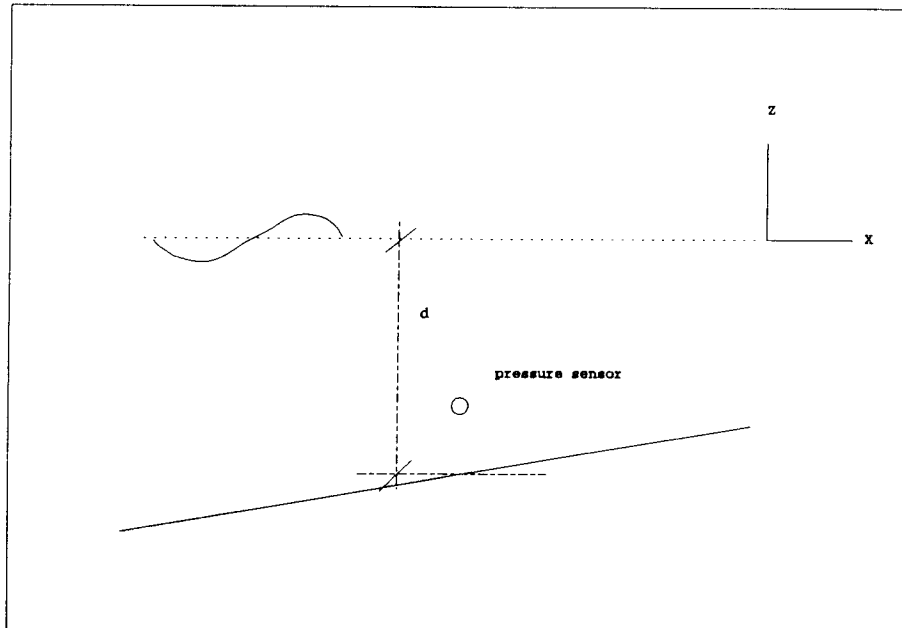


Figure B1 Definition sketch

The pressure sensor yields a time varying signal of the pressure. For monochromatic waves, using linear wave theory we get:

$$p(t) = -\rho g z + \rho g \hat{\eta} \frac{\cosh(k(d+z))}{\cosh(kd)} \sin(\omega t - kx + \phi)$$

which yields in the frequency domain:

$$\hat{\eta}(\omega) = \frac{\hat{p}(\omega)}{\rho g} \frac{\cosh(kd)}{\cosh(k(d+z))}$$

The latter has been used to convert the spectrum obtained from the pressure sensor to a surface elevation spectrum. The relation between wave frequency and wave number is given by the dispersion relation:

$$(\Omega - Fq)^2 = q \tanh(q)$$

where:

$$\Omega = \omega \sqrt{\frac{d}{g}}$$

$$F = \frac{U}{\sqrt{gh}}$$

$$q = kd$$

The velocity  $U$  represents in this case the return flow. Neglecting the return flow in the dispersion relation introduces an error in the spectral conversion, resulting in an underestimation of the wave height. The relative error depends on the magnitude of the two parameters  $F$  and  $\Omega$  (Peregrine, 1976: Interaction of Water Waves and Currents, ass. press). For the strongly erosive case,  $H_{\text{rms}} = 1.0 \text{ m}$ ,  $T_p = 5 \text{ s}$ , these parameters are presented in Table 1. The magnitude of the return flow is obtained from the measurements. We only consider the case with the highest waves, because this corresponds to the maximum in return flow velocities.

$d$ (m)	$\underline{U}$ (m/s)	$\Omega$	$\underline{F}$
4.0	0.05	0.80	0.008
3.0	0.10	0.69	0.018
2.0	0.18	0.57	0.040
1.0	0.18	0.40	0.060
0.5	0.25	0.28	0.110

Table B1 Parameter values

From Figure B2, (Peregrine, 1976), it then follows that the relative error for the peak frequency is always considerably less than 5%. The error increases with increasing frequency, which mainly affects the higher harmonics.

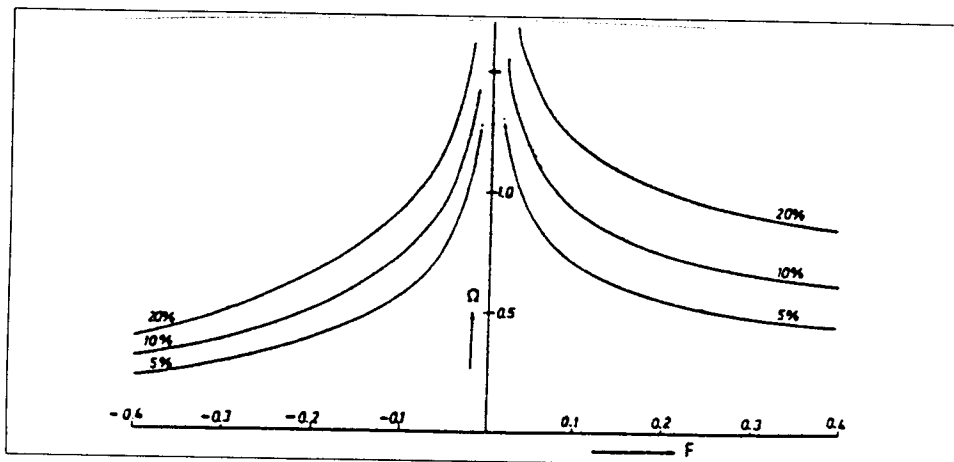


Figure B2 Relative error in surface wave amplitude calculated from bottom pressures due to ignoring a current component parallel with the wave direction (from Peregrine, 1976)

The cut-off criterion for the conversion is set at 1 Hz, because for higher frequencies the converted spectral density becomes infinite. For the data processing we would like to use a single cut-off frequency ( $f_c$ ), which yields a maximum error in amplitude for the highest harmonic of approximately 20%.

Once the surface elevation spectrum is obtained, the significant wave height is given by:

$$H_{m0} = \sqrt{4m_0}$$

where:

$$m_0 = \int_0^{f_c} E(f) df$$

A comparison between  $H_{m0}$  values obtained from the wave gauge WHM03 and those obtained from the pressure sensors shows differences in the order of 1-2 cm.

## **Appendix C**

**Results of statistical analyses of  
all instruments per wave hour**

## Test 1A

WHM01					EMF19					DRO07				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	-.010	.194	.292	.317	la0102	.999	.999	.999	.999	la0102	-.147	1.253	.514	-.476
la0203	-.011	.224	.382	.449	la0203	-.061	.448	.315	-.440	la0203	-.111	1.287	.507	-.417
la0304	-.012	.219	.428	.912	la0304	-.057	.438	.407	-.106	la0304	-.143	1.764	.257	5.070
la0405	-.012	.231	.433	.575	la0405	-.000	.520	-.637	11.269	la0405	-.078	1.272	.516	-.369
la0506	-.011	.230	.419	.590	la0506	.107	.732	.897	13.153	la0506	-.053	1.275	.519	-.365
la0607	-.011	.230	.392	.425	la0607	1.203	.816	1.724	-29.752	la0607	-.086	1.278	.521	-.367
la0708	-.015	.230	.431	.581	la0708	.058	.657	2.006	22.956	la0708	-.087	1.233	.520	-.324
la0809	-.012	.230	.432	.542	la0809	-.145	.312	.607	115.363	la0809	-.082	1.263	.531	-.356
la0911	-.011	.230	.414	.480	la0911	.690	.532	2.416	8.815	la0911	-.139	1.236	.518	-.359
la1012	-.010	.226	.346	.476	la1012	.874	.826	1.451	-1.862	la1012	-.141	1.210	.517	-.384
la1113	-.010	.230	.408	.477	la1113	-.053	.452	.321	-.446	la1113	-.086	1.258	.520	-.333

WHM02					DRO01					DRO08				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	-.014	.195	.586	.631	la0102	-.205	1.437	-.153	-.035	la0102	-.013	1.078	.550	-.247
la0203	-.015	.220	.869	1.080	la0203	-.237	1.649	-.134	-.120	la0203	.022	1.116	.526	-.238
la0304	-.012	.218	.405	.685	la0304	-.235	1.622	-.165	-.185	la0304	.012	1.163	.237	4.146
la0405	-.014	.229	.409	.305	la0405	-.251	1.701	-.125	-.156	la0405	.068	1.078	.509	-.226
la0506	-.013	.229	.405	.325	la0506	-.242	1.690	-.124	-.135	la0506	.068	1.090	.539	-.194
la0607	-.013	.228	.407	.330	la0607	-.233	1.693	-.126	-.133	la0607	.047	1.087	.501	-.202
la0708	-.017	.228	.403	.291	la0708	-.265	1.698	-.121	-.168	la0708	.042	1.050	.504	-.216
la0809	-.014	.230	.408	.321	la0809	-.250	1.695	-.103	-.162	la0809	.066	1.095	.527	-.164
la0911	-.013	.230	.413	.358	la0911	-.240	1.708	-.104	-.159	la0911	.012	1.085	.484	-.184
la1012	-.011	.226	.406	.312	la1012	-.220	1.680	-.182	-.161	la1012	.016	1.065	.506	-.146
la1113	-.012	.230	.399	.288	la1113	-.227	1.695	-.111	-.146	la1113	-.472	1.609	-.541	-.387

WHM03					DRO02					DRO09				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	.999	.999	.999	.999	la0102	-.230	1.500	-.004	-.409	la0102	.094	0.970	.561	-.109
la0203	.664	1.637	.774	.303	la0203	-.238	1.699	.019	-.463	la0203	.107	1.024	.559	-.095
la0304	.005	.184	.926	.820	la0304	-.236	1.656	.007	-.179	la0304	.039	1.735	-.011	7.324
la0405	-.018	.187	.964	.496	la0405	-.247	1.742	.038	-.491	la0405	.123	1.033	.576	-.121
la0506	-.017	.178	.973	.488	la0506	-.259	1.738	.033	-.497	la0506	.128	1.036	.553	-.153
la0607	-.015	.169	.963	.477	la0607	-.222	1.737	.032	-.466	la0607	.131	1.055	.564	-.160
la0708	-.003	.131	.933	.586	la0708	-.280	1.739	.050	-.529	la0708	.120	1.039	.571	-.138
la0809	.015	.115	1.061	.945	la0809	-.239	1.740	.042	-.471	la0809	.122	1.063	.546	-.183
la0911	.024	.154	5.229	56.885	la0911	-.372	1.753	.043	-.659	la0911	.139	1.077	.568	-.171
la1012	-.010	.171	.980	.542	la1012	-.281	1.734	-.004	-.501	la1012	.147	1.081	.557	-.240
la1113	-.015	.205	.759	.300	la1113	-.245	1.743	.024	-.486	la1113	.118	1.106	.564	-.184

EMF11					DRO03					DRO10				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	-.036	.297	.062	-.101	la0102	-.228	1.529	.129	-.627	la0102	.236	.752	.462	-.650
la0203	-.054	.390	.187	-.448	la0203	-.247	1.678	.210	-.708	la0203	.273	.820	.461	-.688
la0304	-.065	.378	.217	-.308	la0304	-.245	1.613	.197	-.446	la0304	.223	1.001	-1.067	11.895
la0405	-.107	.423	.440	-.635	la0405	-.223	1.709	.230	-.692	la0405	.268	.826	.429	-.653
la0506	-.157	.451	.472	-.903	la0506	-.252	1.705	.215	-.724	la0506	.289	.827	.465	-.733
la0607	-.218	.405	.506	-2.082	la0607	-.236	1.707	.222	-.698	la0607	.291	.824	.481	-.772
la0708	-.147	.310	.434	-1.518	la0708	-.290	1.709	.228	-.773	la0708	.229	.807	.440	-.452
la0809	-.113	.357	.440	-.508	la0809	-.275	1.714	.223	-.738	la0809	.270	.820	.511	-.586
la0911	-.105	.328	.474	-.599	la0911	-.404	1.721	.233	-.920	la0911	.287	.823	.462	-.742
la1012	-.193	.444	.453	-1.361	la1012	-.289	1.699	.226	-.706	la1012	.286	.789	.431	-.868
la1113	-.048	.400	.214	-.413	la1113	-.251	1.727	.199	-.722	la1113	.297	.828	.499	-.754

EMF13					DRO04					DRO05				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	-.045	.299	.058	-.183	la0102	-.255	1.531	.272	-.742	la0102	-.252	1.529	.369	-.732
la0203	-.070	.396	.192	-.522	la0203	-.249	1.660	.327	-.746	la0203	-.227	1.621	.416	-.701
la0304	-.081	.382	.238	-.394	la0304	-.226	1.575	.319	-.436	la0304	-.252	1.918	.170	1.679
la0405	-.115	.429	.446	-.694	la0405	-.226	1.676	.346	-.727	la0405	-.207	1.618	.442	-.681
la0506	-.161	.456	.482	-.920	la0506	-.227	1.681	.336	-.720	la0506	-.212	1.624	.428	-.689
la0607	-.211	.408	.496	-1.867	la0607	-.231	1.683	.338	-.729	la0607	-.212	1.620	.425	-.677
la0708	-.140	.322	.461	-1.238	la0708	-.273	1.670	.352	-.773	la0708	-.266	1.620	.435	-.738
la0809	-.110	.371	.423	-.397	la0809	-.255	1.679	.340	-.745	la0809	-.229	1.637	.426	-.690
la0911	-.099	.343	.462	-.470	la0911	-.332	1.683	.347	-.827	la0911	-.374	1.638	.433	-.887
la1012	-.188	.448	.450	-1.240	la1012	-.285	1.663	.361	-.738	la1012	-.289	1.613	.440	-.718
la1113	-.064	.404	.214	-.513	la1113	-.240	1.690	.325	-.732	la1113	-.249	1.654	.407	-.746

EMF15					DRO06				
	mean	stdev	skewness	kurtosis		mean	stdev	skewness	kurtosis
la0102	-.042	.304	.068	-.178	la0102	-.232	1.433	.385	-.762
la0203	-.064	.401	.210	-.489	la0203	-.219	1.500	.406	-.721
la0304	-.074	.392	.180	-.414	la0304	-.178	1.483	.376	.612
la0405	-.114	.437	.472	-.649	la0405	-.168	1.486	.410	-.680
la0506	-.140	.461	.480	-.684	la0506	-.180	1.495	.400	-.708
la0607	-.167	.411	.494	-.979	la0607	-.174	1.506	.400	-.703
la0708	-.091	.345	.491	-.321	la0708	-.224	1.473	.426	-.736
la0809	-.068	.392	.433	-.035	la0809	-.206	1.500	.410	-.730
la0911	-.060	.363	.472	-.075	la0911	-.257	1.497	.434	-.773
la1012	-.142	.457	.458	-.631	la1012	-.212	1.475	.401	-.736
la1113	-.065	.408	.217	-.526	la1113	-.194	1.517	.406	-.702

EMF17				
	mean	stdev	skewness	kurtosis
la0102	-.040	.312	.078	-.180
la0203	-.052	.413	.249	-.427
la0304	-.067	.403	.290	-.275
la0405	-.106	.454	.542	-.508
la0506	-.090	.486	.530	-.104
la0607	-.034	.458	.709	2.711
la0708	.053	.452	.758	14.075
la0809	-.320	.597	2.118	16.288
la0911	.093	.500	2.019	19.997
la1012	-.012	.525	.864	5.993
la1113	-.056	.420	.247	-.495



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DRO10	mean	stdev	skewness	kurtosis
1b0102	.407	.949	.447	-1.156
1b0213	.406	.945	.489	-1.157
1b0304	.409	.925	.480	-1.244
1b0405	.432	.958	.473	-1.272
1b0506	.404	.960	.524	-.981
1b0607	.439	.884	.428	-1.816
1b0707	.519	.915	.468	-2.574
1b0808	.446	.924	.467	-1.711
1b0909	.491	.906	.480	-2.249
1b1010	.471	.930	.483	-1.912
1b1213	.515	.905	.480	-2.514
1b1300	.514	.921	.492	-2.389
1b1400	.536	.911	.496	-2.723
1b1504	.535	.905	.485	-2.766
1b1605	.494	.916	.494	-2.202
1b1706	.515	.911	.493	-2.458







## Test 2B

WHM03				DRO01				DRO07						
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis			
2b0102	-.031	.327	.848	.398	2b0102	-.438	2.697	.001	-.499	2b0102	.221	1.373	.582	-.166
2b0203	-.037	.345	.588	.276	2b0203	-.441	2.704	-.010	-.521	2b0203	.184	1.377	.586	-.111
2b0304	-.013	.249	1.062	.577	2b0304	-.371	2.669	.003	-.485	2b0304	.222	1.365	.595	-.113
2b0405	-.030	.228	1.062	.446	2b0405	-.505	2.707	-.010	-.575	2b0405	.190	1.316	.574	-.142
2b0506	-.006	.216	1.005	.577	2b0506	-.458	2.680	-.010	-.538	2b0506	.252	1.300	.560	-.302
2b0607	.015	.167	.960	-.759	2b0607	-.469	2.698	-.009	-.548	2b0607	.236	1.309	.551	-.238
2b0708	.029	.157	.956	.675	2b0708	-.455	2.698	-.006	-.529	2b0708	.211	1.344	.545	-.224
2b0809	.039	.147	1.082	.878	2b0809	-.450	2.699	-.011	-.529	2b0809	.189	1.328	.539	-.228
2b0910	.048	.115	.774	-.661	2b0910	-.459	2.714	-.015	-.530	2b0910	.248	1.317	.547	-.297
2b1002	-.034	.328	.837	.394	2b1002	-.437	2.709	-.008	-.506	2b1002	.275	1.313	.531	-.410
2b1100	999.	999.	999.	999.	2b1100	-.417	2.707	-.017	-.500	2b1100	.302	1.309	.566	-.352
2b1200	999.	999.	999.	999.	2b1200	-.440	2.710	-.005	-.519	2b1200	.302	1.305	.550	-.420

EMF11				DRO02				DRO08						
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis			
2b0102	-.111	.504	.307	-.535	2b0102	-.388	2.469	.295	-.827	2b0102	.325	1.261	.572	-.431
2b0203	-.133	.463	.533	-.743	2b0203	-.397	2.478	.285	-.832	2b0203	.326	1.272	.565	-.460
2b0304	-.143	.457	.548	-.756	2b0304	-.362	2.457	.281	-.795	2b0304	.314	1.283	.588	-.344
2b0405	-.162	.507	.544	-.775	2b0405	-.462	2.458	.292	-.884	2b0405	.280	1.232	.570	-.369
2b0506	-.288	.463	.538	-2.689	2b0506	-.485	2.450	.298	-.910	2b0506	.332	1.228	.574	-.511
2b0607	-.266	.375	.463	-4.386	2b0607	-.415	2.459	.298	-.827	2b0607	.295	1.233	.536	-.483
2b0708	-.156	.412	.347	-.616	2b0708	-.505	2.474	.281	-.923	2b0708	.272	1.258	.548	-.373
2b0809	-.154	.498	.256	-.403	2b0809	-.401	2.471	.285	-.828	2b0809	.246	1.256	.548	-.331
2b0910	-.108	.461	.145	-.356	2b0910	-.208	2.469	.288	-.707	2b0910	.321	1.254	.551	-.477
2b1002	-.142	.515	.273	-.670	2b1002	-.434	2.471	.294	-.866	2b1002	.348	1.257	.550	-.551
2b1100	999.	999.	999.	999.	2b1100	-.387	2.464	.294	-.800	2b1100	.346	1.256	.565	-.518
2b1200	999.	999.	999.	999.	2b1200	-.363	2.461	.295	-.786	2b1200	.353	1.249	.557	-.597

EMF13				DRO03				DRO09						
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis			
2b0102	-.126	.512	.293	-.635	2b0102	-.193	2.106	.465	-.669	2b0102	.338	1.216	.565	-.422
2b0203	-.141	.472	.530	-.799	2b0203	-.042	2.125	.455	-.633	2b0203	.302	1.227	.572	-.299
2b0304	-.141	.457	.484	-1.064	2b0304	-.142	2.109	.442	-.677	2b0304	.344	1.228	.620	-.211
2b0405	-.160	.515	.545	-.739	2b0405	-.429	2.091	.471	-.871	2b0405	.304	1.187	.581	-.334
2b0506	-.268	.465	.498	-2.206	2b0506	-.143	2.088	.480	-.618	2b0506	.350	1.161	.594	-.458
2b0607	-.261	.376	.438	-4.124	2b0607	-.310	2.112	.482	-.738	2b0607	.316	1.181	.619	-.320
2b0708	-.151	.416	.352	-.633	2b0708	-.231	2.129	.456	-.712	2b0708	.318	1.209	.607	-.307
2b0809	-.130	.502	.262	-.215	2b0809	-.143	2.118	.454	-.644	2b0809	.353	1.189	.602	-.467
2b0910	-.082	.475	.155	-.251	2b0910	.053	2.111	.459	-.622	2b0910	.360	1.175	.624	-.456
2b1002	-.160	.524	.261	-.818	2b1002	-.449	2.111	.466	-.879	2b1002	.377	1.160	.623	-.517
2b1100	999.	999.	999.	999.	2b1100	-.390	2.099	.463	-.842	2b1100	.424	1.152	.609	-.800
2b1200	999.	999.	999.	999.	2b1200	-.067	2.105	.475	-.609	2b1200	.440	1.142	.611	-.872

EMF15				DRO04				DRO10						
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis			
2b0102	-.135	.516	.273	-.679	2b0102	-.136	1.973	.554	-.564	2b0102	.506	1.037	.388	-1.806
2b0203	-.134	.481	.523	-.730	2b0203	-.140	1.958	.542	-.572	2b0203	.477	1.047	.394	-1.502
2b0304	-.146	.476	.539	-.769	2b0304	-.108	1.939	.556	-.540	2b0304	.514	1.076	.417	-1.557
2b0405	-.148	.527	.549	-.596	2b0405	-.179	1.930	.558	-.581	2b0405	.481	1.014	.397	-1.588
2b0506	-.196	.474	.522	-.523	2b0506	-.142	1.928	.566	-.548	2b0506	.486	1.008	.378	-1.739
2b0607	-.214	.378	.409	-2.329	2b0607	-.163	1.936	.564	-.552	2b0607	.496	1.009	.384	-1.739
2b0708	-.119	.424	.365	-.249	2b0708	-.187	1.963	.543	-.585	2b0708	.488	1.039	.381	-1.539
2b0809	-.037	.539	.549	3.938	2b0809	-.186	1.943	.549	-.572	2b0809	.494	1.027	.393	-1.688
2b0910	.051	.620	.968	9.767	2b0910	-.177	1.940	.562	-.548	2b0910	.499	1.021	.400	-1.744
2b1002	-.162	.528	.244	-.846	2b1002	-.155	1.936	.563	-.530	2b1002	.515	1.015	.390	-1.939
2b1100	999.	999.	999.	999.	2b1100	-.156	1.930	.560	-.529	2b1100	.603	1.017	.387	-2.823
2b1200	999.	999.	999.	999.	2b1200	-.141	1.928	.555	-.518	2b1200	.570	1.003	.395	-2.519

EMF17				DRO05					
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis		
2b0102	-.103	.404	.284	-.663	2b0102	-.090	1.879	.527	-.517
2b0203	-.091	.362	.545	-.628	2b0203	-.106	1.894	.537	-.545
2b0304	-.092	.345	.558	-.583	2b0304	-.076	1.877	.518	-.533
2b0405	-.086	.418	.551	-.365	2b0405	-.159	1.873	.524	-.565
2b0506	-.021	.397	.909	2.730	2b0506	-.103	1.872	.517	-.539
2b0607	-.050	.280	.446	.077	2b0607	-.138	1.885	.510	-.587
2b0708	-.017	.350	.497	1.943	2b0708	-.142	1.936	.498	-.609
2b0809	.729	.555	1.399	-19.687	2b0809	-.201	1.938	.476	-.660
2b0910	2.880	.343	2.779	999.	2b0910	-.160	1.932	.488	-.597
2b1002	-.106	.378	.268	-.727	2b1002	-.128	1.949	.486	-.588
2b1100	999.	999.	999.	999.	2b1100	-.106	1.944	.473	-.605
2b1200	999.	999.	999.	999.	2b1200	-.113	1.949	.446	-.620

EMF19				DRO06					
mean	stdev	skewness	kurtosis	mean	stdev	skewness	kurtosis		
2b0102	-.125	.544	.343	-.571	2b0102	.029	1.603	.545	-.318
2b0203	-.089	.518	.576	-.335	2b0203	.003	1.615	.559	-.343
2b0304	-.084	.520	.618	-.215	2b0304	.036	1.570	.566	-.259
2b0405	.101	.648	.468	11.121	2b0405	.011	1.522	.574	-.241
2b0506	1.206	.944	1.480	-17.569	2b0506	.070	1.486	.573	-.250
2b0607	1.243	.745	.390	-51.851	2b0607	.065	1.495	.601	-.203
2b0708	1.108	.735	1.551	-28.477	2b0708	.061	1.521	.590	-.226
2b0809	.908	.314	-1.323	-367.468	2b0809	.049	1.496	.614	-.156
2b0910	.260	1.930	.486	2.118	2b0910	.082	1.467	.612	-.185
2b1002	-.124	.559	.340	-.576	2b1002	.129	1.445	.619	-.143
2b1100	999.	999.	999.	999.	2b1100	.164	1.433	.620	-.210
2b1200	999.	999.	999.	999.	2b1200	.165	1.416	.627	-.205



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DRO10	mean	stdev	skewness	kurtosis
2e0102	.300	1.364	.560	-.358
2e0203	.314	1.368	.514	-.387
2e0304	.297	1.387	.531	-.267
2e0405	.267	1.371	.560	-.108
2e0506	.349	1.341	.538	-.336
2e0607	.383	1.322	.513	-.449
2e0708	.366	1.317	.491	-.488
2e0809	.410	1.298	.541	-.536
2e0910	.363	1.275	.529	-.403
2e1007	.444	1.289	.525	-.691
2e1113	.461	1.267	.563	-.746
2e1213	.430	1.275	.528	-.625
2e1300	.430	1.262	.545	-.617
2e1400	.507	1.252	.542	-.951
2e1500	.460	1.234	.544	-.757
2e1600	.476	1.226	.530	-.890
2e1700	.461	1.245	.543	-.761
2e1800	.491	1.231	.544	-.915

## **Appendix D**

**Results of statistical analyses of the fixed instruments per test  
and possible outliers**

## Results of statistical analyses of the fixed instruments per test and possible outliers

Test 1A

WHM01	mean	stdev	skewness	kurtosis
mean	-.0114	.2249	.3979	.5258
std. dev.	.0014	.0104	.0420	.1421

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0102 skewness  
 la0304 kurtosis  
 la0708 mean

DRO05	mean	stdev	skewness	kurtosis
mean	-.2517	1.6447	.3992	-.5073
std. dev.	.0456	.0916	.0750	.6936

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0304 stdev  
 la0304 skewness  
 la0304 kurtosis  
 la0911 mean

WHM02	mean	stdev	skewness	kurtosis
mean	-.0135	.2239	.4645	.4478
std. dev.	.0016	.0099	.1379	.2396

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0203 skewness  
 la0203 kurtosis

DRO06	mean	stdev	skewness	kurtosis
mean	-.2040	1.4877	.4049	-.6035
std. dev.	.0267	.0214	.0155	.3852

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0304 kurtosis

WHM03	mean	stdev	skewness	kurtosis
mean	.0630	.3131	1.3562	6.1842
std. dev.	.2008	.4420	1.2939	16.9013

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0203 mean  
 la0203 stdev  
 la0911 skewness  
 la0911 kurtosis

DRO07	mean	stdev	skewness	kurtosis
mean	-.1048	1.3026	.4945	.1200
std. dev.	.0312	.1475	.0753	1.5658

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0304 stdev  
 la0304 skewness  
 la0304 kurtosis

DRO01	mean	stdev	skewness	kurtosis
mean	-.2368	1.6607	-.1316	-.1082
std. dev.	.0154	.0748	.0241	.0992

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0304 kurtosis

DRO08	mean	stdev	skewness	kurtosis
mean	-.0120	1.1378	.3947	.1765
std. dev.	.1477	.1516	.3070	1.2567

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0304 kurtosis  
 la1113 mean  
 la1113 stdev  
 la1113 skewness

DRO02	mean	stdev	skewness	kurtosis
mean	-.2590	1.7074	.0255	-.4683
std. dev.	.0400	.0706	.0180	.1087

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0304 kurtosis  
 la0911 mean

DRO09	mean	stdev	skewness	kurtosis
mean	.1153	1.1108	.5098	.5245
std. dev.	.0277	.2003	.1649	2.1505

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0304 mean  
 la0304 stdev  
 la0304 skewness  
 la0304 kurtosis

DRO03	mean	stdev	skewness	kurtosis
mean	-.2673	1.6828	.2102	-.7049
std. dev.	.0483	.0569	.0281	.1070

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 stdev  
 la0102 skewness  
 la0911 mean

DRO10	mean	stdev	skewness	kurtosis
mean	.2681	.8288	.3249	.4543
std. dev.	.0254	.0586	.4408	3.6194

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0304 stdev  
 la0304 skewness  
 la0304 kurtosis

DRO04	mean	stdev	skewness	kurtosis
mean	-.2545	1.6537	.3330	-.7195
std. dev.	.0308	.0491	.0226	.0940

outliers ( $\geq 2.5 \cdot \text{st.dev.}$ )  
 la0102 skewness  
 la0304 kurtosis  
 la0911 mean

## Test 1B

WHM03	mean	stdev	skewness	kurtosis
mean	-.0325	.3305	.5624	.2012
std. dev.	.0095	.0109	.0204	.0545

outliers (&gt; = 2.5\*st.dev)

lb0607	stdev
lb0607	skewness

DRO08	mean	stdev	skewness	kurtosis
mean	.2624	1.1692	.5579	-.3391
std. dev.	.0587	.0295	.0494	.1816

outliers (&gt; = 2.5\*st.dev)

lb1010	skewness
lb1010	kurtosis

DRO01	mean	stdev	skewness	kurtosis
mean	-.0431	2.9466	.0407	-2.6717
std. dev.	1.3319	2.1364	.1952	7.9062

outliers (&gt; = 2.5\*st.dev)

lb0506	1 mean
lb0506	1 stdev
lb0506	1 skewness
lb0506	1 kurtosis

DRO09	mean	stdev	skewness	kurtosis
mean	.2392	1.2578	.5371	-.2646
std. dev.	.0263	.0338	.0426	.0633

outliers (&gt; = 2.5\*st.dev)

DRO02	mean	stdev	skewness	kurtosis
mean	-.4252	2.3704	.2631	-.8654
std. dev.	.0436	.0821	.0232	.0517

outliers (&gt; = 2.5\*st.dev)

lb1010	mean
lb1010	kurtosis

DRO10	mean	stdev	skewness	kurtosis
mean	.4708	.9228	.4799	-1.9453
std. dev.	.0482	.0204	.0209	.6024

outliers (&gt; = 2.5\*st.dev)

DRO03	mean	stdev	skewness	kurtosis
mean	-.1839	2.0366	.4645	-.8839
std. dev.	.3524	.0193	.0497	.4912

outliers (&gt; = 2.5\*st.dev)

lb0607	- mean
lb0607	- kurtosis

DRO04	mean	stdev	skewness	kurtosis
mean	-.1834	1.8790	.5415	-.5857
std. dev.	.0347	.0173	.0525	.0471

outliers (&gt; = 2.5\*st.dev)

DRO05	mean	stdev	skewness	kurtosis
mean	-.1296	1.8103	.5131	-.5780
std. dev.	.0402	.0282	.0487	.0347

outliers (&gt; = 2.5\*st.dev)

DRO06	mean	stdev	skewness	kurtosis
mean	-.0682	1.5846	.4954	-.4679
std. dev.	.0464	.0573	.0584	.0965

outliers (&gt; = 2.5\*st.dev)

DRO07	mean	stdev	skewness	kurtosis
mean	.1439	1.2773	.5673	-.2374
std. dev.	.0564	.0188	.0198	.0796

outliers (&gt; = 2.5\*st.dev)

## Test 1C

WHM01	mean	stdev	skewness	kurtosis
mean	-.0075	.1397	.4112	.4672
std. dev.	.0013	.0051	.3683	1.0314

outliers (&gt; = 2.5\*st.dev)

DRO07	mean	stdev	skewness	kurtosis
mean	-.0925	1.1117	1.0056	.8502
std. dev.	.0309	.0237	.0099	.0339

outliers (&gt; = 2.5\*st.dev)

WHM02	mean	stdev	skewness	kurtosis
mean	-.0079	.1442	.6864	1.0620
std. dev.	.0013	.0049	.5272	1.8903

outliers (&gt; = 2.5\*st.dev)

DRO08	mean	stdev	skewness	kurtosis
mean	.5051	1.1024	.5404	-84.0747
std. dev.	1.3989	.1974	.5977	287.0760

outliers (&gt; = 2.5\*st.dev)

lc0204	stdev
lc0807	mean
lc0807	skewness
lc0807	kurtosis

WHM03	mean	stdev	skewness	kurtosis
mean	-.0098	.1440	1.5160	3.9377
std. dev.	.0133	.0196	.3462	3.1151

outliers (&gt; = 2.5\*st.dev)

lc0514	mean
lc1009	kurtosis

DRO09	mean	stdev	skewness	kurtosis
mean	-.0985	1.1052	.6775	.3595
std. dev.	.0215	.0169	.0172	.0321

outliers (&gt; = 2.5\*st.dev)

DRO01	mean	stdev	skewness	kurtosis
mean	-.1106	1.2643	.0662	-.1789
std. dev.	.0122	.0082	.0065	.0399

outliers (&gt; = 2.5\*st.dev)

lc0908 stdev

DRO10	mean	stdev	skewness	kurtosis
mean	.1569	.7621	.5015	-.2062
std. dev.	.0182	.0102	.0134	.0602

outliers (&gt; = 2.5\*st.dev)

DRO02	mean	stdev	skewness	kurtosis
mean	-.1438	1.3515	.4647	.0489
std. dev.	.0645	.0078	.0073	.0611

outliers (&gt; = 2.5\*st.dev)

lc0908 stdev

DRO03	mean	stdev	skewness	kurtosis
mean	-.2290	1.3692	.8867	.2947
std. dev.	.2595	.0135	.0297	.5663

outliers (&gt; = 2.5\*st.dev)

DRO04	mean	stdev	skewness	kurtosis
mean	-.1545	1.3353	1.0272	.8628
std. dev.	.0203	.0100	.0110	.0355

outliers (&gt; = 2.5\*st.dev)

DRO05	mean	stdev	skewness	kurtosis
mean	-.1681	1.3799	.9817	.8527
std. dev.	.0321	.0228	.0121	.0630

outliers (&gt; = 2.5\*st.dev)

DRO06	mean	stdev	skewness	kurtosis
mean	-.2217	1.3340	.9213	.5962
std. dev.	.0269	.0542	.0349	.0950

outliers (&gt; = 2.5\*st.dev)



## Test 2A

WHM01	mean	stdev	skewness	kurtosis
mean	-.0097	.2089	.3482	.2018
std. dev.	.0025	.0014	.0081	.0107

outliers (> = 2.5\*st.dev)  
2a0910 mean

DRO06	mean	stdev	skewness	kurtosis
mean	-.1637	1.4754	.5454	-.2789
std. dev.	.0344	.0133	.0103	.0434

outliers (> = 2.5\*st.dev)

WHM02	mean	stdev	skewness	kurtosis
mean	-.0114	.2115	.3041	.0602
std. dev.	.0025	.0017	.0091	.0154

outliers (> = 2.5\*st.dev)  
2a0910 mean

DRO07	mean	stdev	skewness	kurtosis
mean	-.0228	1.2674	.6491	.0681
std. dev.	.0381	.0226	.0143	.0494

outliers (> = 2.5\*st.dev)

WHM03	mean	stdev	skewness	kurtosis
mean	.0218	.2059	.9423	.4158
std. dev.	.1017	.0569	.3764	5.4684

outliers (> = 2.5\*st.dev)  
2a0708 mean  
2a0708 stdev  
2a0708 kurtosis  
2a0809 skewness

DRO08	mean	stdev	skewness	kurtosis
mean	.0938	1.1408	.5919	-.1106
std. dev.	.0291	.0099	.0113	.0425

outliers (> = 2.5\*st.dev)

DRO01	mean	stdev	skewness	kurtosis
mean	-.1888	1.6812	-.0636	-.1857
std. dev.	.0233	.0097	.0056	.0186

outliers (> = 2.5\*st.dev)  
2a0910 mean  
2a1114 skewness

DRO09	mean	stdev	skewness	kurtosis
mean	.1331	1.0877	.5879	-.0205
std. dev.	.0340	.0202	.0100	.0825

outliers (> = 2.5\*st.dev)  
2a0102 kurtosis

DRO02	mean	stdev	skewness	kurtosis
mean	-.2327	1.7339	.1802	-.4924
std. dev.	.1001	.0087	.0112	.1090

outliers (> = 2.5\*st.dev)  
2a1114 skewness

DRO10	mean	stdev	skewness	kurtosis
mean	.2722	.9070	.4672	-.5034
std. dev.	.0365	.0091	.0325	.2177

outliers (> = 2.5\*st.dev)  
2a0102 skewness

DRO03	mean	stdev	skewness	kurtosis
mean	-.2521	1.7967	.2693	-.7302
std. dev.	.2487	.0150	.0163	.3490

outliers (> = 2.5\*st.dev)  
2a0506 kurtosis

DRO04	mean	stdev	skewness	kurtosis
mean	-.2304	1.7294	.4048	-.5993
std. dev.	.0257	.0080	.0123	.0350

outliers (> = 2.5\*st.dev)

DRO05	mean	stdev	skewness	kurtosis
mean	-.2358	1.7022	.4814	-.5524
std. dev.	.0278	.0068	.0111	.0350

outliers (> = 2.5\*st.dev)

## Test 2B

WHM03	mean	stdev	skewness	kurtosis
mean	-.0020	.2279	.9174	.3766
std. dev.	.0307	.0788	.1484	.3886

outliers (> = 2.5\*st.dev)  
2b0910 kurtosis

DRO09	mean	stdev	skewness	kurtosis
mean	.3522	1.1856	.6023	-.4553
std. dev.	.0420	.0280	.0193	.1908

outliers (> = 2.5\*st.dev)

DRO01	mean	stdev	skewness	kurtosis
mean	-.4450	2.6993	-.0081	-.5232
std. dev.	.0304	.0125	.0055	.0233

outliers (> = 2.5\*st.dev)

DRO10	mean	stdev	skewness	kurtosis
mean	.5107	1.0261	.3920	-1.8486
std. dev.	.0364	.0199	.0098	.3914

outliers (> = 2.5\*st.dev)

2b0304	stdev
2b0304	skewness
2b1100	mean

DRO02	mean	stdev	skewness	kurtosis
mean	-.4006	2.4651	.2905	-.8321
std. dev.	.0727	.0079	.0060	.0566

outliers (> = 2.5\*st.dev)

2b0910 mean

DRO03	mean	stdev	skewness	kurtosis
mean	-.2072	2.1087	.4640	-.7095
std. dev.	.1526	.0117	.0112	.0967

outliers (> = 2.5\*st.dev)

DRO04	mean	stdev	skewness	kurtosis
mean	-.1558	1.9420	.5560	-.5533
std. dev.	.0228	.0142	.0076	.0208

outliers (> = 2.5\*st.dev)

DRO05	mean	stdev	skewness	kurtosis
mean	-.1268	1.9107	.5000	-.5804
std. dev.	.0336	.0315	.0257	.0400

outliers (> = 2.5\*st.dev)

DRO06	mean	stdev	skewness	kurtosis
mean	.0720	1.5058	.5917	-.2282
std. dev.	.0523	.0613	.0264	.0568

outliers (> = 2.5\*st.dev)

DRO07	mean	stdev	skewness	kurtosis
mean	.2360	1.3297	.5605	-.2503
std. dev.	.0395	.0267	.0193	.1033

outliers (> = 2.5\*st.dev)

DRO08	mean	stdev	skewness	kurtosis
mean	.3132	1.2533	.5603	-.4538
std. dev.	.0319	.0155	.0139	.0817

outliers (> = 2.5\*st.dev)

## Test 2C

WHM01	mean	stdev	skewness	kurtosis
mean	-.0066	.1376	.2562	.1095
std. dev.	.0037	.0005	.0043	.0235

outliers (> = 2.5\*st.dev)  
 2c0708 mean  
 2c1100 skewness  
 2c1100 kurtosis

DRO06	mean	stdev	skewness	kurtosis
mean	-.1677	1.1970	.8701	.5616
std. dev.	.0409	.0378	.0149	.0503

outliers (> = 2.5\*st.dev)  
 2c0102 skewness  
 2c0708 mean

WHM02	mean	stdev	skewness	kurtosis
mean	-.0073	.1428	.4767	.3738
std. dev.	.0036	.0004	.0042	.0209

outliers (> = 2.5\*st.dev)  
 2c0708 mean

DRO07	mean	stdev	skewness	kurtosis
mean	-.0460	.9990	1.0350	.9374
std. dev.	.0495	.0187	.0130	.0300

outliers (> = 2.5\*st.dev)  
 2c0102 skewness  
 2c0708 mean

WHM03	mean	stdev	skewness	kurtosis
mean	-.0069	.1464	1.2688	2.4736
std. dev.	.0084	.0168	.3317	1.2463

outliers (> = 2.5\*st.dev)

DRO08	mean	stdev	skewness	kurtosis
mean	.0023	1.0213	.7135	.1652
std. dev.	.1075	.0152	.0225	.1238

outliers (> = 2.5\*st.dev)  
 2c0506 kurtosis

DRO01	mean	stdev	skewness	kurtosis
mean	-.1077	1.2672	.0571	-.1277
std. dev.	.0353	.0023	.0049	.0238

outliers (> = 2.5\*st.dev)  
 2c0708 mean

DRO09	mean	stdev	skewness	kurtosis
mean	.0813	.8697	.4956	.0257
std. dev.	.0371	.0169	.0273	.0566

outliers (> = 2.5\*st.dev)  
 2c0102 skewness

DRO02	mean	stdev	skewness	kurtosis
mean	-.0939	1.3622	.4653	.0613
std. dev.	.1327	.0042	.0122	.0685

outliers (> = 2.5\*st.dev)  
 2c0506 stdev  
 2c0506 skewness  
 2c0708 mean  
 2c0708 kurtosis

DRO10	mean	stdev	skewness	kurtosis
mean	.4681	.6596	.2666	-4.8888
std. dev.	.0438	.0354	.0380	1.6445

outliers (> = 2.5\*st.dev)

DRO03	mean	stdev	skewness	kurtosis
mean	-.1959	1.3696	.8770	.3990
std. dev.	.2167	.0288	.0517	.5977

outliers (> = 2.5\*st.dev)  
 2c0506 mean  
 2c0506 stdev  
 2c0506 kurtosis  
 2c0607 skewness

DRO04	mean	stdev	skewness	kurtosis
mean	-.1499	1.3538	.9967	.8040
std. dev.	.0462	.0077	.0140	.0277

outliers (> = 2.5\*st.dev)  
 2c0708 mean

DRO05	mean	stdev	skewness	kurtosis
mean	-.1772	1.4198	.9152	.8397
std. dev.	.0550	.0154	.0295	.0457

outliers (> = 2.5\*st.dev)  
 2c0708 mean

## Test 2E

WHM03	mean	stdev	skewness	kurtosis
mean	-.0179	.2984	.7132	.3019
std. dev.	.0186	.0568	.2220	.2851

outliers (&gt; = 2.5\*st.dev)

DRO07	mean	stdev	skewness	kurtosis
mean	-.0019	1.7558	.5159	-.3885
std. dev.	.0452	.0183	.0137	.0489

outliers (&gt; = 2.5\*st.dev)

2e0102	skewness
2e0102	kurtosis

DRO01	mean	stdev	skewness	kurtosis
mean	-.3079	2.5099	-.0978	-.3782
std. dev.	.0330	.0158	.0121	.0431

outliers (&gt; = 2.5\*st.dev)

2e0102	skewness
2e0102	kurtosis
2e0405	stdev

DRO08	mean	stdev	skewness	kurtosis
mean	.0833	1.6356	.5007	-.4024
std. dev.	.0540	.0268	.0147	.0712

outliers (&gt; = 2.5\*st.dev)

2e0102	skewness
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DRO02	mean	stdev	skewness	kurtosis
mean	-.3108	2.4919	.1047	-.6874
std. dev.	.1477	.0109	.0077	.1035

outliers (&gt; = 2.5\*st.dev)

2e0405	stdev
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DRO09	mean	stdev	skewness	kurtosis
mean	.1151	1.6190	.5576	-.2737
std. dev.	.0328	.0311	.0213	.0637

outliers (&gt; = 2.5\*st.dev)

DRO03	mean	stdev	skewness	kurtosis
mean	-.2652	2.3762	.1944	-.9301
std. dev.	.2725	.0227	.0149	.2239

outliers (&gt; = 2.5\*st.dev)

2e0405	stdev
2e1700	kurtosis

DRO10	mean	stdev	skewness	kurtosis
mean	.4005	1.2958	.5356	-.5714
std. dev.	.0713	.0513	.0175	.2331

outliers (&gt; = 2.5\*st.dev)

2e0708	skewness
--------	----------

DRO04	mean	stdev	skewness	kurtosis
mean	-.2332	2.2831	.2791	-.8229
std. dev.	.0378	.0149	.0100	.0306

outliers (&gt; = 2.5\*st.dev)

2e0405	stdev
2e0405	kurtosis
2e0910	mean

DRO05	mean	stdev	skewness	kurtosis
mean	-.2331	2.2814	.3666	-.7666
std. dev.	.0499	.0219	.0065	.0431

outliers (&gt; = 2.5\*st.dev)

2e0102	stdev
2e0203	skewness

DRO06	mean	stdev	skewness	kurtosis
mean	-.1264	1.9564	.4844	-.5068
std. dev.	.0471	.0172	.0133	.0539

outliers (&gt; = 2.5\*st.dev)

2e0405	stdev
2e0405	kurtosis

## **Appendix E**

**Presentation of data omitted from the measurement data set**

## Presentation of data omitted from the measurement data set

0: no measurements  
 1: instrument not deployed  
 2: break down  
 3: above water level  
 4: burried  
 5: wandering offset  
 6: parameter not computed  
 7: series too short  
 8: other

1A0102		8	1B0607 WHM01	1	1B1010 DRO08	5
1A0203 WHM03		1	1B0607 WHM02	1	1B1102 WHM01	1
1A0304 WHM03 Hm0		6	1B0607 DRO01	1	1B1102 WHM02	1
1A0405 WHM03 Hm0		6	1B0607 DRO03	5	1B1213 WHM01	1
1A0405 EMF19		3	1B0607 EMF11	1	1B1213 WHM02	1
1A0506 WHM03 Hm0		6	1B0607 EMF13	1	1B1300 WHM01	1
1A0506 EMF19		3	1B0607 EMF15	1	1B1300 WHM02	1
1A0607 EMF19		3	1B0607 EMF17	1	1B1300 DRO03	5
1A0708 EMF19		3	1B0607 EMF19	1	1B1300 EMF11	1
1A0708 EMF17		3	1B0607 EMF111	1	1B1300 EMF13	1
1A0809 EMF19		3	1B0607 EMF113	1	1B1300 EMF15	1
1A0809 EMF17		3	1B0607 EMF115	1	1B1300 EMF17	1
1A0911 EMF19		3	1B0607 EMF117	1	1B1300 EMF19	1
1A0911 EMF17		3	1B0607 EMF119	1	1B1300 EMF111	1
1A1012 EMF19		3	1B0607 EMF211	1	1B1300 EMF113	1
1A1012 EMF17		3	1B0607 EMF213	1	1B1300 EMF115	1
1A1113 DRO08		5	1B0607 EMF215	1	1B1300 EMF117	1
1A1012 WHM01		7	1B0607 EMF217	1	1B1300 EMF119	1
1A1012 WHM02		7	1B0607 EMF219	1	1B1300 EMF211	1
1A1012 WHM03		7	1B0707 WHM01	1	1B1300 EMF213	1
1B0102 WHM01		1	1B0707 WHM02	1	1B1300 EMF215	1
1B0102 WHM02		1	1B0707 EMF17	3	1B1300 EMF217	1
1B0102 WHM03		1	1B0707 EMF19	3	1B1300 EMF219	1
1B0213 WHM01		1	1B0808 WHM01	1	1B1400 WHM01	1
1B0213 WHM02		1	1B0808 WHM02	1	1B1400 WHM02	1
1B0304 WHM01		1	1B0808 EMF19	3	1B1400 EMF11	1
1B0304 WHM02		1	1B0909 WHM01	1	1B1400 EMF13	1
1B0405 WHM01		1	1B0909 WHM02	1	1B1400 EMF15	1
1B0405 WHM02		1	1B0909 EMF19	3	1B1400 EMF17	1
1B0405 EMF19		3	1B0909 EMF17	3	1B1400 EMF19	1
1B0506 WHM01		1	1B1010 WHM01	1	1B1400 EMF111	1
1B0506 WHM02		1	1B1010 WHM02	1	1B1400 EMF113	1
1B0606 EMF17		3	1B1010 EMF19	3	1B1400 EMF115	1
1B0506 EMF19		3	1B1010 EMF17	3	1B1400 EMF117	1
1B0506 DRO01		5	1B1010 EMF15	3	1B1400 EMF119	1

1B1400 EMF211	1	1C1300 EMF15	1	2B0809 EMF19	3
1B1400 EMF213	1	1C1300 EMF17	1	2B0809 EMF17	3
1B1400 EMF215	1	1C1300 EMF19	1	2B0910 WHM01	1
1B1400 EMF217	1	1C1300 EMF111	1	2B0910 WHM02	1
1B1400 EMF219	1	1C1300 EMF113	1	2B0910 EMF19	3
1B1504 WHM01	1	1C1300 EMF115	1	2B0910 EMF17	3
1B1504 WHM02	1	1C1300 EMF117	1	2B0910 EMF15	3
1B1605 WHM01	1	1C1300 EMF119	1	2B1002 WHM01	1
1B1605 WHM02	1	1C1300 EMF211	1	2B1002 WHM02	1
1B1605 EMF19	3	1C1300 EMF213	1	2B1100 WHM01	1
1B1706 WHM01	1	1C1300 EMF215	1	2B1100 WHM02	1
1B1706 WHM02	1	1C1300 EMF217	1	2B1100 WHM03	1
1B1706 EMF19	3	1C1300 EMF219	1	2B1100 EMF11	1
1C0102 EMF17	3	2A0002	0	2B1100 EMF13	1
1C0204 EMF17	3	2A0405 DRO03	5	2B1100 EMF15	1
1C0204 DRO08	4	2A0405 EMF19	3	2B1100 EMF17	1
1C0313 EMF17	3	2A0506 EMF19	3	2B1100 EMF19	1
1C0405 EMF17	3	2A0607 DRO03	5	2B1100 EMF111	1
1C0405 EMF19	3	2A0607 EMF19	3	2B1100 EMF113	1
1C0615 EMF19	3	2A0708 WHM03	2	2B1100 EMF115	1
1C0706 EMF19	3	2A0708 DRO03	5	2B1100 EMF117	1
1C0706 EMF17	3	2A0708 EMF19	3	2B1100 EMF119	1
1C0807 EMF19	3	2A0708 EMF17	3	2B1100 EMF211	1
1C0807 DRO08	4	2A0809 EMF19	3	2B1100 EMF213	1
1C0908 EMF19	3	2A0809 EMF17	3	2B1100 EMF215	1
1C1009 EMF19	3	2A0910 EMF19	3	2B1100 EMF217	1
1C1009 EMF17	3	2A0910 EMF17	3	2B1100 EMF219	1
1C1009 EMF15	3	2A0910 EMF15	3	2B1200 WHM01	1
1C1110 EMF19	3	2A1205 EMF19	3	2B1200 WHM02	1
1C1110 EMF17	3	2B0102 WHM01	1	2B1200 WHM03	1
1C1200 EMF11	1	2B0102 WHM02	1	2B1200 EMF11	1
1C1200 DRO03	5	2B0203 WHM01	1	2B1200 EMF13	1
1C1200 EMF13	1	2B0203 WHM02	1	2B1200 EMF15	1
1C1200 EMF15	1	2B0304 WHM01	1	2B1200 EMF17	1
1C1200 EMF17	1	2B0304 WHM02	1	2B1200 EMF19	1
1C1200 EMF19	1	2B0405 WHM01	1	2B1200 EMF111	1
1C1200 EMF111	1	2B0405 WHM02	1	2B1200 EMF113	1
1C1200 EMF113	1	2B0405 EMF19	3	2B1200 EMF115	1
1C1200 EMF115	1	2B0506 WHM01	1	2B1200 EMF117	1
1C1200 EMF117	1	2B0506 WHM02	1	2B1200 EMF119	1
1C1200 EMF119	1	2B0506 EMF19	3	2B1200 EMF211	1
1C1200 EMF211	1	2B0607 WHM01	1	2B1200 EMF213	1
1C1200 EMF213	1	2B0607 WHM02	1	2B1200 EMF215	1
1C1200 EMF215	1	2B0607 EMF19	3	2B1200 EMF217	1
1C1200 EMF217	1	2B0708 WHM01	1	2B1200 EMF219	1
1C1200 EMF219	1	2B0708 WHM02	1	2E0102 WHM01	1
1C1300 DRO03	5	2B0708 EMF19	3	2E0102 WHM02	1
1C1300 EMF11	1	2B0809 WHM01	1	2E0203 DRO02	5
1C1300 EMF13	1	2B0809 WHM02	1	2E0203 DRO03	5

2E0203 WHM01	1	2E1300 EMF213	1	2E1600 EMF119	1
2E0203 WHM02	1	2E1300 EMF215	1	2E1600 EMF211	1
2E0304 WHM01	1	2E1300 EMF217	1	2E1600 EMF213	1
2E0304 WHM02	1	2E1300 EMF219	1	2E1600 EMF215	1
2E0405 WHM01	1	2E1400 WHM01	1	2E1600 EMF217	1
2E0405 WHM02	1	2E1400 WHM02	1	2E1600 EMF219	1
2E0405 DRO10	4	2E1400 EMF11	1	2E1700 WHM01	1
2E0506 WHM01	1	2E1400 EMF13	1	2E1700 WHM02	1
2E0506 WHM02	1	2E1400 EMF15	1	2E1700 EMF11	1
2E0506 DRO02	5	2E1400 EMF17	1	2E1700 EMF13	1
2E0506 DRO03	5	2E1400 EMF19	1	2E1700 EMF15	1
2E0506 DRO10	4	2E1400 EMF111	1	2E1700 EMF17	1
2E0607 WHM01	1	2E1400 EMF113	1	2E1700 EMF19	1
2E0607 WHM02	1	2E1400 EMF115	1	2E1700 EMF111	1
2E0607 DRO10	4	2E1400 EMF117	1	2E1700 EMF113	1
2E0708 WHM01	1	2E1400 EMF119	1	2E1700 EMF115	1
2E0708 WHM02	1	2E1400 EMF211	1	2E1700 EMF117	1
2E0708 DRO03	5	2E1400 EMF213	1	2E1700 EMF119	1
2E0708 DRO10	4	2E1400 EMF215	1	2E1700 EMF211	1
2E0809 WHM01	1	2E1400 EMF217	1	2E1700 EMF213	1
2E0809 WHM02	1	2E1400 EMF219	1	2E1700 EMF215	1
2E0809 DRO10	4	2E1500 WHM01	1	2E1700 EMF217	1
2E0809 EMF17	3	2E1500 WHM02	1	2E1700 EMF219	1
2E0809 EMF19	3	2E1500 EMF11	1	2E1800 WHM01	1
2E0910 WHM01	1	2E1500 EMF13	1	2E1800 WHM02	1
2E0910 WHM02	1	2E1500 EMF15	1	2E1800 EMF11	1
2E0910 DRO10	4	2E1500 EMF17	1	2E1800 EMF13	1
2E0910 EMF19	3	2E1500 EMF19	1	2E1800 EMF15	1
2E0910 EMF17	3	2E1500 EMF111	1	2E1800 EMF17	1
2E0910 EMF15	3	2E1500 EMF113	1	2E1800 EMF19	1
2E1007 WHM01	1	2E1500 EMF115	1	2E1800 EMF111	1
2E1007 WHM02	1	2E1500 EMF117	1	2E1800 EMF113	1
2E1113 WHM01	1	2E1500 EMF119	1	2E1800 EMF115	1
2E1113 WHM02	1	2E1500 EMF211	1	2E1800 EMF117	1
2E1213 WHM01	1	2E1500 EMF213	1	2E1800 EMF119	1
2E1213 WHM02	1	2E1500 EMF215	1	2E1800 EMF211	1
2E1300 WHM01	1	2E1500 EMF217	1	2E1800 EMF213	1
2E1300 WHM02	1	2E1500 EMF219	1	2E1800 EMF215	1
2E1300 EMF11	1	2E1600 WHM01	1	2E1800 EMF217	1
2E1300 EMF13	1	2E1600 WHM02	1	2E1800 EMF219	1
2E1300 EMF15	1	2E1600 EMF11	1	2C0405 EMF19	3
2E1300 EMF17	1	2E1600 EMF13	1	2C0506 EMF19	3
2E1300 EMF19	1	2E1600 EMF15	1	2C0506 EMF17	3
2E1300 EMF111	1	2E1600 EMF17	1	2C0506 DRO03	5
2E1300 EMF113	1	2E1600 EMF19	1	2C0506 DRO08	5
2E1300 EMF115	1	2E1600 EMF111	1	2C0607 EMF19	3
2E1300 EMF117	1	2E1600 EMF113	1	2C0607 EMF17	3
2E1300 EMF119	1	2E1600 EMF115	1	2C0607 DRO08	5
2E1300 EMF211	1	2E1600 EMF117	1	2C0708 EMF19	3



2C0708 DRO02	5	2C1100 EMF219	1
2C0708 DRO03	5	2C1200 EMF11	1
2C0809 EMF19	3	2C1200 EMF13	1
2C0809 EMF17	3	2C1200 EMF15	1
2C0809 EMF15	3	2C1200 EMF17	1
2C0900 EMF11	1	2C1200 EMF19	1
2C0900 EMF13	1	2C1200 EMF111	1
2C0900 EMF15	1	2C1200 EMF113	1
2C0900 EMF17	1	2C1200 EMF115	1
2C0900 EMF19	1	2C1200 EMF117	1
2C0900 EMF111	1	2C1200 EMF119	1
2C0900 EMF113	1	2C1200 EMF211	1
2C0900 EMF115	1	2C1200 EMF213	1
2C0900 EMF117	1	2C1200 EMF215	1
2C0900 EMF119	1	2C1200 EMF217	1
2C0900 EMF211	1	2C1200 EMF219	1
2C0900 EMF213	1	2C1300	0
2C0900 EMF215	1	2C1400	0
2C0900 EMF217	1	2C1500	0
2C0900 EMF219	1	2C1600	0
2C1000 EMF11	1	2C1700	0
2C1000 EMF13	1	2C1800	0
2C1000 EMF15	1	2C1900	0
2C1000 EMF17	1	2C2000	0
2C1000 EMF19	1	2C2100 DRO02	5
2C1000 EMF111	1	2C2100 DRO03	5
2C1000 EMF113	1	2C2100 DRO08	5
2C1000 EMF115	1	2C2100 EMF11	1
2C1000 EMF117	1	2C2100 EMF13	1
2C1000 EMF119	1	2C2100 EMF15	1
2C1000 EMF211	1	2C2100 EMF17	1
2C1000 EMF213	1	2C2100 EMF19	1
2C1000 EMF215	1	2C2100 EMF111	1
2C1000 EMF217	1	2C2100 EMF113	1
2C1000 EMF219	1	2C2100 EMF115	1
2C1100 EMF11	1	2C2100 EMF117	1
2C1100 EMF13	1	2C2100 EMF119	1
2C1100 EMF15	1	2C2100 EMF211	1
2C1100 EMF17	1	2C2100 EMF213	1
2C1100 EMF19	1	2C2100 EMF215	1
2C1100 EMF111	1	2C2100 EMF217	1
2C1100 EMF113	1	2C2100 EMF219	1
2C1100 EMF115	1		
2C1100 EMF117	1		
2C1100 EMF119	1		
2C1100 EMF211	1		
2C1100 EMF213	1		
2C1100 EMF215	1		
2C1100 EMF217	1		

## Appendix F

### Example of data for wave propagation model

## Example of data for wave propagation model

\* Hrms wave height 2B0203

\* fp Hrms/Hm0

BL0

2 1

.200

.707

\* x depth SWL

BL1

369 3

-- Profile data at 0.5 m intervals --

\* X [m] Hm0 [m]

BL2

11 2

20.0000 1.3897

20.0000 1.4173

65.0000 1.2998

100.0000 1.0497

115.0000 .9524

130.0000 .8646

138.0000 .7176

145.0000 .5808

152.0000 .5427

160.0000 .5056

170.0000 .4118

## **Appendix G**

**Example of data for return flow model**

## Example of data for return flow model

\* Return flow 2A0203

* Hrms	TpD	D50	Hrip	Qb-meas	Qb-est	Ust-dev	Diss	h
* [m]	[s]	[m]	[m]	[-]	[-]	[m/s]	[W/m2]	[m]

BL01

1 9

.647	5.005	.000200	.004		.074	.412	13.913	1.681
------	-------	---------	------	--	------	------	--------	-------

* Zrel	Zabs	Umean
--------	------	-------

* [m]	[m]	[m/s]
-------	-----	-------

BL02

5 3

.100	2.520	-.032
------	-------	-------

.200	2.620	-.043
------	-------	-------

.400	2.820	-.036
------	-------	-------

.700	3.120	-.025
------	-------	-------

1.100	3.420	-.054
-------	-------	-------

## **Appendix H**

**Example of data for sediment concentration model**

## Example of data for sediment concentration model

```

* Concentration 2B0203
* Umean Ust-dev      D50      D90      Hrip      h      Diss
* [m/s]  [m/s]      [m]      [m]      [m]      [m]  [W/m2]
BL01
  1  7
  -.133  .463  .000200  .000247  .003  1.826  46.169
* Zrel  Zabs  Conc.
* [m]  [m]  [gr/l]
BL02
  10  3
  .050  2.360  .218
  .075  2.385  .228
  .100  2.410  .186
  .130  2.440  .205
  .180  2.490  .218
  .255  2.565  .125
  .400  2.710  .119
  .650  2.960  .077
  1.050  3.360  .084
  1.550  3.860  .071

```

# Appendix I

Example of data for velocity moments



## Example of data for velocity moments

\* Velocity moments 2B0203

* Hrms	TpD	h	Ust-dev	Qb est.	Qb m.	guss	guls
* [m]	[s]	[m]	[m/s]	[-]	[-]	[m/s]	[m/s]
BL01							
1	8						
.742	5.022	1.826	.463	.056		.055386	-.002372

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