Stan Hooker

AMT-8 (25 April to 7 June 1999) LoCNESS Log for the Sequential Day of the Year (SDY) with all times reported in GMT
(SDY 125 is 5 May and SDY 156 is 5 June).

Cast No.	SDY	Position Longitude	Position Latitude	Darks Es	Darks Lu/Ed	Down Cast Beg.	Down Cast End	CCD Pic.	Depth [m]	Sky Conditions Around the Sun
1	125	-42.2701	-30.7339	1512	1512	1553	1555		135	Mostly cloudy with brightening.
2	125	-42.2723	-30.7336			1613	1615		140	Overcast cloudy with brightening.
3	125	-42.2859	-30.7289			1714	1716		130	Overcast with some brightening.
4	128	-29.5651	-24.5547	1410	1410	1513	1516		160	Partly cloudy, cirrus in front of sun.
5	128	-29.5669	-24.5540			1522	1524		160	Partly cloudy, cirrus in front of sun.
6	128	-29.5686	-24.5537			1530	1533	1537	145	Partly cloudy, cirrus in front of sun.
7	129	-25.8268	-22.2244	1434	1434	1444	1446		150	Clear.
8	129	-25.8285	-22.2245			1453	1455	1458	160	Clear.
9	129	-25.8295	-22.2247			1501	1503		160	Clear.
10	130	-23.0392	-18.9922	1346	1346	1414	1417		170	Clear.
11	130	-23.0411	-18.9916			1418	1431		165	Clear.
12	130	-23.0439	-18.9909			1436	1439		160	Clear.
13	131	-20.5361	-16.0447	1159	1159	1215	1218		180	Clear.
14	131	-20.5371	-16.0444			1224	1226		160	Cloudy, sun at the end of the cast.
15	131	-20.3917	-15.8631		1355	1417	1419		120	Cloudy, sun at the end of the cast.
16	131	-20.3925	-15.8621			1423	1426		160	Clear.
17	131	-20.3933	-15.8614			1431	1434	1436	180	Clear.
18	132	-17.9123	-12.8890	1305	1305	1338	1341		125	Clear.
19	132	-17.9147	-12.8882			1347	1350	1352	155	Clear.
20	132	-17.9221	-12.8848			1409	1411		100	Clear.
21	133	-15.2141	-9.6051	1249	1249	1307	1309		110	Clear.
22	133	-15.2173	-9.6036			1315	1318	1322	155	Clear.
23	133	-15.2198	-9.6031			1324	1326		140	Clear, small cloud in the middle of the cast.
24	138	-14.5101	-7.6387	1315	1315	1442	1444		100	Clear with thin cumulus clouds.
25	139	-15.5310	-4.1196	1012	1012	1040	1042		130	Clear with high haze.
26	139	-15.5310	-4.1209			1051	1053		115	Clear with high haze; cloud edges at start.
27	139	-15.5309	-4.1210			1058	1101	1102	180	Clear with high haze.
28	139	-15.6181	-3.8713	1245	1245	1321	1322		105	Cirrus clouds.
29	139	-15.6197	-3.8727			1327	1329		105	Cirrus clouds.
30	139	-15.6211	-3.8738			1332	1334		105	Cirrus clouds.
31	140	-16.7110	-0.0751	0954	0954	1038	1041		110	Thin high cumulus clouds; cloud edge in middle.
32	140	-16.7098	-0.0741			1048	1050		120	Thin high cumulus clouds.
33	140	-16.7087	-0.0735			1056	1059	1118	105	Thin high cumulus clouds; cloud in middle.
34	140	-16.8019	0.2418		1336	1344	1346	1319	100?	Thin high cirrus clouds.
35	141	-18.0118	4.3128	1340	1340	1403	1405		125	Thin high cirrus clouds.
36	141	-18.0128	4.3125			1413	1415		125	Thin high cirrus clouds.
37	141	-18.0137	4.3121			1420	1423		140	Thin high cirrus clouds.
38	141	-18.0147	4.3117			1428	1430	1433	125	Thin high cirrus clouds.
39	142	-19.0523	7.8401	1205	1205	1251	1253		120	Clear with high haze.
40	142	-19.0508	7.8414			1258	1300		110	Clear with high haze.
41	142	-19.0492	7.8422			1305	1307	1308	115	Clear with high haze.
42	142	-19.0460	7.8440			1318	1320		115	Clear with high haze.
43	142	-19.0435	7.8445			1327	1329		125	Clear with high haze.
44	142	-19.0416	7.8450			1335	1337		130	Clear with high haze.
45	144	-20.9987	15.1502	1001	1001	1053	1053		140	Clear with high haze.
46	144	-20.9983	15.1503			1108	1110	1109	125	Clear with high haze.
47	144	-20.9979	15.1502			1115	1117		125	Clear with high haze.
48	144	-20.9997	15.1502		1223	1231	1234		130	Clear with high haze.
49	144	-20.9996	15.1514			1239	1241		130	Clear with high haze.
50	144	-20.9996	15.1514			1246	1248		125	Clear with high haze.
51	144	-20.9992	15.1511			1253	1255	1254	130	Clear with high haze.
52	144	-20.9998	15.1507			1314	1316		115	Clear with high haze.
53	144	-20.9997	15.1509			1320	1322		110	Clear with high haze.
54	144	-20.9995	15.1510			1326	1327		100	Clear with high haze.
55	144	-20.9998	15.1511			1337	1339		100	Clear with high haze.
56	144	-21.0003	15.1511			1343	1345		105	Clear with high haze.
57	145	-20.9995	18.8022	0945	0945	1036	1038		100	Cloudy.
58	145	-20.9991	18.8027			1043	1045	1051	100	Cloudy.
59	145	-20.9982	18.8038			1059	1101		100	Clear then cloudy.
60	145	-20.9971	18.8064			1117	1118		70	Clear then cloudy.
61	145	-20.9971	19.3092			1407	1409		125	Cloudy with a little brightening.
62	145	-20.9956	19.3105			1422	1424	1427	95	Clear then cloudy.
63	145	-20.9943	19.3123			1428	1430		125	Cloudy with some brightening.
64	145	-20.9939	19.3132			1436	1438		125	Cloudy with a little brightening.
65	145	-20.9918	19.3154			1450	1451		100	Clear then cloudy.
66	146	-21.0686	23.2769	1239	1239	1333	1335		120	Clear.

67	146	-21.0709	23.2757		1338	1340	1346	110	Clear.
68	146	-21.0735	23.2741		1349	1352		130	Clear.
69	146	-21.0761	23.2725		1357	1359		145	Clear.
70	147	-21.8722	27.0508	1301 1301	1339	1342		155	Clear with thin cirrus.
71	147	-21.8741	27.0505		1349	1352	1354	155	Clear with thin cirrus.
72	147	-21.8759	27.0505		1405	1407		165	Clear with thin cirrus.
73	147	-21.8775	27.0505		1415	1418		180	Clear with thin cirrus.
74	147	-21.8813	27.0504		1425	1428		150	Clear with thin cirrus.
75	147	-21.8835	27.0504		1432	1435		130	Clear with thin cirrus.
76	148	-21.4981	30.9547	1334 1334	1409	1412	1407	160	Overcast.
77	148	-21.4998	30.9542		1418	1421		155	Overcast with brightening at the end.
78	148	-21.5008	30.9538		1425	1428		155	Overcast with slow brightening.
79	149	-20.6916	34.5498	1236 1236	1306	1308		155	Clear, cloud edges in the middle of the cast.
80	149	-20.6921	34.5504		1314	1316		90	Clear, cloud in the middle of the cast.
81	149	-20.6923	34.5503		1320	1323		140	Clear.
82	149	-20.6924	34.5503		1326	1329		175	Clear.
83	150	-20.0042	38.6417	1350 1350	1405	1408		155	Overcast with slow brightening.
84	150	-20.0060	38.6423		1413	1415	1419	155	Overcast with slow brightening.
85	150	-20.0072	38.6435		1425	1429		165	Clear with thin cumulus.
86	150	-20.0075	38.6442		1434	1437		175	Clear with thin cumulus.
87	152	-20.0039	46.3761	1302 1302	1333	1335		110	Clear with thin cirrus.
88	152	-20.0030	46.3740		1342	1345		95	Clear with cirrus.
89	152	-20.0025	46.3728		1348	1350		115	Cirrus and thin cumulus.
90	152	-20.0027	46.3709		1356	1357		100	Cloudy with brightening.
91	153	-15.6636	47.4543	1000 1000	1039	1041	1045	130	Overcast with slow brightening.
92	153	-15.6652	47.4552		1049	1051		110	Overcast.
93	153	-15.6661	47.4555		1054	1056		120	Overcast.
94	153	-15.6670	47.4561		1100	1102		120	Overcast.
95	153	-15.6685	47.4566		1107	1109		115	Overcast.
96	153	-15.6700	47.4574		1116	1118		100	Overcast.
97	154	-9.6645	48.1486	1022 1022	1051	1053		115	Clear.
98	154	-9.6647	48.1487		1103	1105		115	Clear.
99	154	-9.6648	48.1488		1108	1110	1111	100	Clear.
100	154	-9.6652	48.1487		1117	1118		75	Clear, cloud at the end of the cast.
101	154	-9.4086	48.2132	1232	1249	1249		75	Clear.
102	154	-9.4120	48.2132		1253	1254	1255	75	Clear.
103	154	-9.4143	48.2128		1258	1259		75	Clear.
104	154	-9.4156	48.2124		1302	1304		135	Clear.
105	154	-9.2356	48.2542	1451	1506	1508		65	Clear with thin cirrus.
106	154	-9.2366	48.2546		1510	1511		60	Clear with thin cirrus.
107	154	-9.2376	48.2552		1514	1515		55	Clear with thin cirrus.
108	154	-9.2382	48.2553		1517	1518	1519	65	Clear with thin cirrus.
109	154	-9.2391	48.2555		1521	1522		60	Clear with thin cirrus.
110	154	-9.2398	48.2556		1524	1525		55	Clear with thin cirrus.
111	154	-9.2417	48.2564		1532	1534		65	Clear with thin cirrus.
112	154	-9.2429	48.2569		1536	1537		70	Clear with thin cirrus.
113	154	-9.2446	48.2576		1540	1541		65	Clear with thin cirrus, cloud at the end.
114!	155	-9.2503	48.9774	1029 1029	1052	1055		100	Cirrus.
115!	155	-9.2506	48.9760		1059	1102	1105	100	Cirrus.
116!	155	-9.2508	48.9749		1106	1107		90	Cirrus, cloud edges at the end of the cast.
117!	155	-9.2531	48.9721		1116	1118		90	Cirrus.
118!	155	-9.2535	48.9708		1121	1123		100	Cirrus.
119!	155	-9.1804	48.9836	1239	1254	1256		100	Overcast.
120!	155	-9.1830	48.9833		1307	1309	1310	100	Overcast with brightening.
121!	155	-9.1848	48.9831		1312	1313		75	Overcast with darkening.
122!	155	-9.1860	48.9832		1315	1317		100	Overcast.
123!	155	-9.1890	48.9824		1321	1322		100	Overcast (a very small amount of rain).

Notes:

0. The Es sensor is OCM-030 on MVD-009 (MVD-009K.CAL).
   The data logger is OCP-011 and the heads are OCI-050 (Ed), OCR-036 (Lu), and OCI-048 (Eu). The calibration file is OCP011K.CAL. The distance from the Ed sensor aperture to the Eu sensor aperture is 1787 mm and the Ed to Lu distance is 1779 mm. The top of Ed is 575 mm above the pressure sensor, Lu is 1210 mm below the pressure sensor, and Eu is 1218 mm below the pressure sensor. The fluorometer inlet port where the funnel attaches is 50 mm above the pressure sensor. The conductivity sensor is 60 mm above the pressure sensor.
   ! indicates sampling in a coccolithophore bloom.
1. No fluorometer data during cast 1.
2. Cast 2 was executed with no problems.
3. The sky was more diffuse during cast 3.
4. Cast 4 was done simultaneously with SeaSAS cast 1 and SeaFALLS cast 13.
5. Cast 5 was done simultaneously with SeaSAS cast 2 and SeaFALLS cast 14.
6. Cast 6 was done simultaneously with SeaSAS cast 3 and SeaFALLS cast 15.

7. Cast 7 was done simultaneously with SeaSAS cast 10 and SeaFALLS cast 21.
8. Cast 8 was done simultaneously with SeaSAS cast 12 and SeaFALLS cast 22.
9. Cast 9 was done simultaneously with SeaSAS cast 14 and SeaFALLS cast 23.
10. Cast 10 was done simultaneously with SeaSAS cast 23 and SeaFALLS cast 28.
11. Cast 11 was done simultaneously with SeaSAS cast 25.
12. Cast 12 was done simultaneously with SeaSAS cast 26 and SeaFALLS cast 29.
13. Cast 13 was done simultaneously with SeaSAS cast 38 and SeaFALLS cast 36.
14. Cast 14 was done simultaneously with SeaSAS cast 40 and SeaFALLS cast 37.
15. Cast 15 was done simultaneously with SeaSAS cast 42 and SeaFALLS cast 38.
16. Cast 16 was done simultaneously with SeaSAS cast 43 and SeaFALLS cast 39.
17. Cast 17 was done simultaneously with SeaSAS cast 45 and SeaFALLS cast 40.
18. Cast 18 was done simultaneously with SeaSAS cast 59 and SeaFALLS cast 47.
19. Cast 19 was done simultaneously with SeaSAS cast 61 and SeaFALLS cast 48.
20. Cast 20 was done simultaneously with SeaSAS cast 63 and SeaFALLS cast 49.
21. Cast 21 was done simultaneously with SeaSAS cast 70 and SeaFALLS cast 53.
22. Cast 22 was done simultaneously with SeaSAS cast 72 and SeaFALLS cast 54.
23. Cast 23 was done simultaneously with SeaSAS cast 74 and SeaFALLS cast 55.
24. Cast 24 was done simultaneously with SeaFALLS cast 56.
25. Cast 25 was done simultaneously with SeaSAS cast 82 and SUnSAS (water) cast 44.
26. Cast 26 was done simultaneously with SeaSAS cast 84 and SUnSAS (water) cast 46.
27. Cast 27 was done simultaneously with SeaSAS cast 86 and SUnSAS (water) cast 48.
28. Cast 28 was done simultaneously with SeaSAS cast 87.
29. Cast 29 was done simultaneously with SeaSAS cast 88.
30. Cast 30 was done simultaneously with SeaSAS cast 89.
31. Cast 31 was done simultaneously with SeaSAS cast 90 and SeaFALLS cast 57.
32. Cast 32 was done simultaneously with SeaSAS cast 91 and SeaFALLS cast 58.
33. Cast 33 was done simultaneously with SeaSAS cast 92 and SeaFALLS cast 59.
34. Cast 34 was done simultaneously with SeaSAS cast 98 and SeaFALLS cast 62.
35. Cast 35 was done simultaneously with SeaSAS cast 114 and SUnSAS (water) cast 68.
36. Cast 36 was done simultaneously with SeaSAS cast 117 and SUnSAS (water) cast 71.
37. Cast 37 was done simultaneously with SeaSAS cast 119 and SUnSAS (water) cast 73.
38. Cast 38 was done simultaneously with SeaSAS cast 121 and SUnSAS (water) cast 75.
39. Cast 39 was done simultaneously with SeaSAS cast 140 and SUnSAS (water) cast 94.
40. Cast 40 was done simultaneously with SeaSAS cast 142 and SUnSAS (water) cast 96.
41. Cast 41 was done simultaneously with SeaSAS cast 144 and SUnSAS (water) cast 98.
42. Cast 42 was done simultaneously with SeaSAS cast 146 and SUnSAS (water) cast 100.
43. Cast 43 was done simultaneously with SeaSAS cast 148 and SUnSAS (water) cast 102.
44. Cast 44 was done simultaneously with SeaSAS cast 150 and SUnSAS (water) cast 104.
45. Cast 45 was done simultaneously with SeaSAS cast 165 and SUnSAS (water) cast 119.
46. Cast 46 was done simultaneously with SeaSAS cast 169 and SUnSAS (water) cast 123.
47. Cast 47 was done simultaneously with SeaSAS cast 171 and SUnSAS (water) cast 125.
48. Cast 48 was done simultaneously with SeaSAS cast 175 and SUnSAS (water) cast 129.
49. Cast 49 was done simultaneously with SeaSAS cast 177 and SUnSAS (water) cast 131.
50. Cast 50 was done simultaneously with SeaSAS cast 179 and SUnSAS (water) cast 133.
51. Cast 51 was done simultaneously with SeaSAS cast 181 and SUnSAS (water) cast 135.
52. Cast 52 was done simultaneously with SeaSAS cast 182 and SeaFALLS cast 81.
53. Cast 53 was done simultaneously with SeaSAS cast 183 and SeaFALLS cast 82.
54. Cast 54 was done simultaneously with SeaSAS cast 184 and SeaFALLS cast 83.
55. Cast 55 was done simultaneously with SeaSAS cast 185 and SUnSAS (water) cast 136.
56. Cast 56 was done simultaneously with SeaSAS cast 187 and SUnSAS (water) cast 138.
57. Cast 57 was done simultaneously with SeaSAS cast 192 and SUnSAS (water) cast 143.
58. Cast 58 was done simultaneously with SeaSAS cast 194 and SUnSAS (white) cast 145.
59. Cast 59 was done simultaneously with SeaSAS cast 196 and SUnSAS (water) cast 147.
60. Cast 60 was done simultaneously with SeaSAS cast 199 and SUnSAS (water) cast 150.
61. Cast 61 was done simultaneously with SeaSAS cast 200 and SUnSAS (water) cast 151.
62. Cast 62 was done simultaneously with SeaSAS cast 202 and SUnSAS (water) cast 153.
63. Cast 63 was done simultaneously with SeaSAS cast 203 and SUnSAS (water) cast 154.
64. Cast 64 was done simultaneously with SeaSAS cast 205 and SUnSAS (water) cast 156.
65. Cast 65 was done simultaneously with SeaSAS cast 207 and SUnSAS (water) cast 158.
66. Cast 66 was done simultaneously with SeaSAS cast 214 and SUnSAS (water) cast 165.
67. Cast 67 was done simultaneously with SeaSAS cast 215 and SUnSAS (water) cast 166.
68. Cast 68 was done simultaneously with SeaSAS cast 216 and SUnSAS (water) cast 167.
69. Cast 69 was done simultaneously with SeaSAS cast 218 and SUnSAS (water) cast 169.
70. Cast 70 was done simultaneously with SeaSAS cast 238 and SUnSAS (water) cast 195.
71. Cast 71 was done simultaneously with SeaSAS cast 240 and SUnSAS (water) cast 197.
72. Cast 72 was done simultaneously with SeaSAS cast 242 and SUnSAS (water) cast 199.
73. Cast 73 was done simultaneously with SeaSAS cast 244 and SUnSAS (water) cast 201.
74. Cast 74 was done simultaneously with SeaSAS cast 245 and SUnSAS (water) cast 202.
75. Cast 75 was done simultaneously with SeaSAS cast 247 and SUnSAS (water) cast 204.
76. Cast 76 was done simultaneously with SeaSAS cast 265 and SUnSAS (water) cast 225.
77. Cast 77 was done simultaneously with SeaSAS cast 267 and SUnSAS (water) cast 227.
78. Cast 78 was done simultaneously with SeaSAS cast 269 and SUnSAS (water) cast 229.
79. Cast 79 was done simultaneously with SeaSAS cast 280 and SUnSAS (water) cast 245.
80. Cast 80 was done simultaneously with SeaSAS cast 281 and SUnSAS (water) cast 246.
81. Cast 81 was done simultaneously with SeaSAS cast 282 and SUnSAS (water) cast 247.
82. Cast 82 was done simultaneously with SeaSAS cast 283 and SUnSAS (water) cast 248.
83. Cast 83 was done simultaneously with SeaSAS cast 290 and SUnSAS (water) cast 255.
84. Cast 84 was done simultaneously with SeaSAS cast 292 and SUnSAS (gray) cast 257.
85. Cast 85 was done simultaneously with SeaSAS cast 293 and SUnSAS (water) cast 258.
86. Cast 86 was done simultaneously with SeaSAS cast 295 and SUnSAS (water) cast 260.
87. Cast 87 was done simultaneously with SeaSAS cast 316 and SUnSAS (water) cast 287.
88. Cast 88 was done simultaneously with SeaSAS cast 318 and SUnSAS (water) cast 289.
89. Cast 89 was done simultaneously with SeaSAS cast 319 and SUnSAS (water) cast 290.
90. Cast 90 was done simultaneously with SeaSAS cast 320 and SUnSAS (water) cast 291.
91. Cast 91 was done simultaneously with SeaSAS cast 321 and SUnSAS (water) cast 295.

92. Cast 92 was done simultaneously with SeaSAS cast 323 and SUnSAS (water) cast 297.
93. Cast 93 was done simultaneously with SeaSAS cast 324 and SUnSAS (white) cast 298.
94. Cast 94 was done simultaneously with SeaSAS cast 326 and SUnSAS (water) cast 300.
95. Cast 95 was done simultaneously with SeaSAS cast 328 and SUnSAS (gray) cast 302.
96. Cast 96 was done simultaneously with SeaSAS cast 330 and SUnSAS (water) cast 304.
97. Cast 97 was done simultaneously with SeaSAS cast 335.
98. Cast 98 was done simultaneously with SeaSAS cast 336.
99. Cast 99 was done overlapping with SeaSAS cast 337 and SeaFALLS cast 113.
100. Cast 100 was done simultaneously with SeaSAS cast 339.
101. Cast 101 was done simultaneously with SeaSAS cast 340 and SUnSAS (water) cast 325.
102. Cast 102 was done simultaneously with SeaSAS cast 341 and SUnSAS (gray) cast 326.
103. Cast 103 was done simultaneously with SeaSAS cast 342 and SUnSAS (water) cast 327.
104. Cast 104 was done simultaneously with SeaSAS cast 343 and SUnSAS (gray) cast 328.
105. Cast 105 was done simultaneously with SeaSAS cast 353 and SeaFALLS cast 122.
106. Cast 106 was done simultaneously with SeaSAS cast 354 and SeaFALLS cast 123.
107. Cast 107 was done simultaneously with SeaSAS cast 355 and SeaFALLS cast 124.
108. Cast 108 was done simultaneously with SeaSAS cast 356 and SeaFALLS cast 125.
109. Cast 109 was done simultaneously with SeaSAS cast 357 and SeaFALLS cast 126.
110. Cast 110 was done simultaneously with SeaSAS cast 358 and SeaFALLS cast 127.
111. Cast 111 was done simultaneously with SeaSAS cast 360 and SeaFALLS cast 128.
112. Cast 112 was done simultaneously with SeaSAS cast 361 and SeaFALLS cast 129.
113. Cast 113 was done simultaneously with SeaSAS cast 362 and SeaFALLS cast 130.
114. Cast 114 was done simultaneously with SeaSAS cast 363 and SUnSAS (water) cast 338.
115. Cast 115 was done simultaneously with SeaSAS cast 364 and SUnSAS (water) cast 339.
116. Cast 116 was done simultaneously with SeaSAS cast 365 and SUnSAS (water) cast 340.
117. Cast 117 was done simultaneously with SeaSAS cast 366 and SUnSAS (water) cast 341.
118. Cast 118 was done simultaneously with SeaSAS cast 367 and SUnSAS (water) cast 342.
119. Cast 119 was done simultaneously with SeaSAS cast 369 and SUnSAS (water) cast 344.
120. Cast 120 was done simultaneously with SeaSAS cast 370 and SUnSAS (water) cast 345.
121. Cast 121 was done simultaneously with SeaSAS cast 371 and SUnSAS (water) cast 346.
122. Cast 122 was done simultaneously with SeaSAS cast 372 and SUnSAS (water) cast 347.
123. Cast 123 was done simultaneously with SeaSAS cast 373 and SUnSAS (water) cast 348.

Stan Hooker

AMT-8 (25 April to 7 June 1999) SeaFALLS Log for the Sequential Day of the Year (SDY) with all times reported in GMT
(SDY 123 is 3 May and SDY 156 is 5 June).

Cast No.	SDY	Position Longitude	Position Latitude	Darks Ew	Darks Ea	Darks Lu/Ed	Down Cast Beg.	Down Cast End	CCD Pic.	Depth [m]	Sky Conditions Around the Sun
1	123	-51.6712	-35.0827	0818		0818	1413	1415	0922	100	Clear.
2	123	-51.6726	-35.0839				1419	1422	1443	100	Clear.
3	123	-51.6737	-35.0847				1425	1427		100	Clear.
4	123	-51.6752	-35.0857				1432	1434		105	Clear.
5	124	-47.0163	-32.9636	1314		1314	1405	1408		145	Overcast with some brightening.
6	124	-47.0171	-32.9635				1417	1420		135	Overcast with some brightening.
7	126	-38.3187	-28.8508	1311		1311	1404	1406		115	Overcast with some brightening.
8	126	-38.3190	-28.8508				1413	1415		135	Overcast with some brightening.
9	126	-38.3200	-28.8510				1425	1427		145	More overcast with some brightening.
10	127	-34.2516	-26.8959	1301		1301	1312	1315		100	Overcast with some brightening.
11	127	-34.2515	-26.8957				1320	1322		135	Overcast with some brightening.
12	127	-34.2513	-26.8960				1328	1331		135	Overcast with some brightening.
13	128	-29.5651	-24.5547	1413		1413	1513	1516		145	Partly cloudy, cirrus in front of sun.
14	128	-29.5669	-24.5540				1522	1524		150	Partly cloudy, cirrus in front of sun.
15	128	-29.5686	-24.5537				1530	1533	1537	140	Partly cloudy, cirrus in front of sun.
16	129	-25.8173	-22.2286	1330		1330	1402	1406		160	Clear.
17	129	-25.8184	-22.2276				1411	1414		160	Clear.
18	129	-25.8200	-22.2268				1420	1422		140	Clear.
19	129	-25.8227	-22.2256				1428	1431		125	Clear.
20	129	-25.8248	-22.2248				1435	1438		135	Clear.
21	129	-25.8270	-22.2244				1444	1447		170	Clear with thin cirrus.
22	129	-25.8285	-22.2245				1453	1455	1458	140	Clear.
23	129	-25.8295	-22.2247				1501	1503		125	Clear.
24	130	-23.2208	-19.2105	1123		1123	1139	1142		175	Clear.
25	130	-23.2211	-19.2096				1149	1152		175	Clear.
26	130	-23.2216	-19.2090				1202	1206		200	Clear.
27	130	-23.2233	-19.2060				1214	1216	1219	100	Clear.
28	130	-23.0392	-18.9922	1346	1346	1346	1414	1417		180	Clear.
29	130	-23.0438	-18.9909				1436	1438		110	Clear.
30	130	-23.0469	-18.9903				1450	1453		170	Clear.
31	130	-23.0484	-18.9900				1459	1502		175	Clear.
32	130	-23.0508	-18.9891				1513	1516		150	Clear.
33+	130	-23.0543	-18.9885				1535	1538	1539	150	Clear.
34+	130	-23.0569	-18.9876				1551	1554		170	Clear.
35+	130	-23.0590	-18.9872				1602	1605		155	Clear, cloudy at end of cast.
36	131	-20.5361	-16.0447	1149		1149	1215	1218		175	Clear.
37	131	-20.5371	-16.0444				1224	1226		145	Cloudy, sun at end of cast.
38	131	-20.3917	-15.8631		1355	1355	1417	1419		120	Cloudy, sun at end of cast.
39	131	-20.3925	-15.8621				1423	1426		165	Clear.
40	131	-20.3933	-15.8614				1431	1434	1436	175	Clear.
41+	131	-20.3960	-15.8576				1500	1503		180	Clear.
42+	131	-20.3996	-15.8539				1527	1530		180	Clear.
43+	131	-20.4010	-15.8527				1538	1541		180	Clear.
44+	132	-18.1270	-13.1682	1005	1005	1005	1056	1059		160	Clear.
45+	132	-18.1283	-13.1661				1105	1108	1110	145	Clear.
46+	132	-18.1337	-13.1615				1124	1127		145	Clear.
47	132	-17.9123	-12.8890			1149	1338	1341		150	Clear.
48	132	-17.9147	-12.8882				1347	1350		175	Clear.
49	132	-17.9223	-12.8847				1409	1412		150	Clear.
50+	133	-15.4025	-9.8587	0954	0954	0954	1042	1045		155	Clear, cloud at end of cast.
51+	133	-15.4042	-9.8585				1053	1056	1058	175	Clear, cloud edge at end of cast.
52+	133	-15.4063	-9.8575				1104	1106		125	Clear.
53	133	-15.2141	-9.6051			1245	1307	1309		130	Clear.
54	133	-15.2173	-9.6036				1315	1318	1322	150	Clear.
55	133	-15.2198	-9.6031				1324	1326		155	Clear, small cloud in middle of cast.
56	138	-14.5106	-7.6389	1315		1315	1443	1445		105	Clear with thin cumulus clouds.
57	140	-16.7110	-0.0751	1007		1007	1038	1041		140	Thin high cumulus clouds; cloud edge in middle.
58	140	-16.7098	-0.0741				1048	1050		125	Thin high cumulus clouds.
59	140	-16.7087	-0.0735				1056	1059	1118	110	Thin high cumulus clouds; cloud in middle.

60+	140	-16.7994	0.2319		1247	1247	1312	1314	1319	125	Thin high cirrus clouds.
61+	140	-16.7998	0.2348				1322	1325		125	Thin high cirrus clouds.
62	140	-16.8020	0.2420				1344	1347		115	Thin high cirrus clouds.
63+	141	-17.8834	3.8994	0946	0946	0946	1038	1040		130	Thin hich cirrus clouds.
64+	141	-17.8833	3.9000				1047	1049		130	Thin hich cirrus clouds.
65+	141	-17.8835	3.9006				1055	1058	1105	130	Thin hich cirrus clouds.
66+	141	-17.8839	3.9022				1108	1110		110	Cloudy, brightening in the middle of the cast.
67+	141	-17.8839	3.9026				1115	1117		125	Thin hich cirrus clouds.
68+	141	-17.8838	3.9028				1121	1124		125	Thin hich cirrus clouds.
69	142	-18.9876	7.6207	0947		0947	1038	1040		105	Clear with high haze.
70	142	-18.9871	7.6209				1043	1045		105	Clear with high haze.
71	142	-18.9869	7.6210				1050	1052	1054	110	Clear with high haze.
72	142	-18.9862	7.6211				1057	1100		160	Clear with high haze.
73	142	-18.9856	7.6216				1104	1106		105	Clear with high haze.
74	142	-18.9853	7.6220				1110	1113		135	Clear with high haze.
75	142	-18.9852	7.6222				1118	1121		125	Clear with high haze.
76+	143	-20.1479	11.5644	0959	0959	0959	1042	1044		100	Clear with high haze.
77+	143	-20.2589	11.9183		1251	1251	1352	1354		125	Clear with high haze; cloud edge at end.
78+	143	-20.2592	11.9177				1405	1407		100	Cloud edges throughout cast.
79+	143	-20.2595	11.9177				1410	1412	1415	130	Clear with high haze.
80+	143	-20.2598	11.9171				1418	1420		130	Clear with high haze.
81	144	-20.9998	15.1507		1254	1254	1314	1316	1254	110	Clear with high haze.
82	144	-20.9997	15.1509				1320	1322		115	Clear with high haze.
83	144	-20.9995	15.1510				1326	1327		100	Clear with high haze.
84+	146	-21.0071	22.9115	0956	0956	0956	1044	1046		125	Clear with thin cirrus.
85+	146	-21.0074	22.9123				1058	1058	1103	130	Clear with thin cirrus.
86+	146	-21.0079	22.9123				1106	1108		110	Clear with thin cirrus.
87+	146	-21.0081	22.9129				1114	1117		150	Clear with thin cirrus.
88+	147	-21.8056	26.6933	0931	0931	0931	1046	1049		155	Clear.
89+	147	-21.8046	26.6939				1053	1056	1058	150	Clear, cloud edge at the end of the cast.
90+	147	-21.8031	26.6943				1104	1107		150	Clear.
91+	147	-21.8020	26.6951				1112	1116		210	Clear.
92+	148	-21.5607	30.4769		0955	0955	1034	1047		150	Overcast with slow brightening.
93+	148	-21.5608	30.4776				1046	1049	1051	160	Overcast with brightening.
94+	148	-21.5601	30.4804				1101	1103		155	Overcast.
95+	148	-21.5602	30.4820				1108	1111		155	Overcast.
96	149	-20.7876	34.3650	1010		1010	1050	1053	1055	165	Clear.
97	149	-20.7874	34.3635				1101	1104		160	Clear, cloud edge in the middle of the cast.
98	149	-20.7883	34.3630				1112	1114		100	Clear, cloud in the middle of the cast.
99	150	-20.0144	38.1779	1010		1010	1035	1037	1039	120	Clear.
100	151	-20.0000	42.0021	1011		1011	1045	1048	1051	125	Overcast.
101	151	-19.9996	42.0033				1053	1056		130	Overcast with slow brightening.
102	151	-19.9963	42.0075				1121	1123		100	Clear then cloudy.
103	151	-20.0079	42.2642			1228	1304	1307	1309	150	Clear, very small cloud at the end of the cast.
104	151	-20.0064	42.2664				1315	1318		145	Clear.
105+	152	-19.9783	45.9438	0934	0934	0934	1015	1017		110	Clear with thin cirrus.
106+	152	-19.9788	45.9440				1024	1026	1025	125	Clear with thin cirrus.
107+	152	-19.9798	45.9445				1032	1034		130	Clear with thin cirrus.
108+	152	-19.9802	45.9453				1039	1041		140	Clear with thin cirrus.
109+	152	-19.9812	45.9459				1045	1048		130	Clear with thin cirrus.
110	153	-14.7764	47.5429	1443		1443	1524	1525		75	Cloudy, bright at the end of the cast.
111	153	-14.7785	47.5429				1535	1537		100	Cloudy.
112	153	-14.7799	47.5427				1541	1543		110	Cloudy.
113	154	-9.6649	48.1488	1053		1053	1107	1109		130	Clear.
114	154	-9.6650	48.1488				1113	1115		85	Clear, cloud at the end of the cast.
115	154	-9.4229	48.2121			1319	1325	1326		75	Clear, cloud at the end of the cast.
116	154	-9.4265	48.2122				1334	1335		50	Clear, cloud at the end of the cast.
117	154	-9.4275	48.2122				1336	1337		55	Clear.
118+	154	-9.4288	48.2121		1327		1339	1340		75	Clear.
119+	154	-9.4303	48.2123				1343	1344		75	Clear.
120	154	-9.4340	48.2114				1354	1355		65	Clear.
121	154	-9.4347	48.2113				1357	1358		75	Clear.
122	154	-9.2356	48.2542	1451		1451	1506	1508		65	Clear with thin cirrus.
123	154	-9.2366	48.2546				1510	1511		60	Clear with thin cirrus.
124	154	-9.2376	48.2552				1514	1515		55	Clear with thin cirrus.
125	154	-9.2382	48.2553				1517	1518	1519	65	Clear with thin cirrus.
126	154	-9.2391	48.2555				1521	1522		60	Clear with thin cirrus.
127	154	-9.2398	48.2556				1524	1525		55	Clear with thin cirrus.
128	154	-9.2417	48.2564				1532	1534		65	Clear with thin cirrus.
129	154	-9.2429	48.2569				1536	1537		70	Clear with thin cirrus.
130	154	-9.2446	48.2576				1540	1541		65	Clear with thin cirrus, cloud at the end.
131!	155	-8.8705	49.0310	1453		1453	1509	1512	1506	70	Overcast with slow darkening.

						A8PROLog				
132!	155	-8.8712	49.0310			1512	1515		65	Overcast with slow brightening.
133!	155	-8.8723	49.0311			1517	1520		65	Overcast with slow darkening (and very light rain).
134	156	-4.4468	49.7004	0922	0922	0935	0936		55	Overcast.
135	156	-4.4449	49.6994			0939	0940		55	Overcast.
136	156	-4.4433	49.6990			0942	0943	0945	60	Overcast.
137	156	-4.4344	49.6973			1004	1004		60	Clear.
138	156	-4.4330	49.6967			1008	1009		65	Clear.
139	156	-4.4303	49.6955			1016	1017		35	Clear, cloud at the end of the cast.
140	156	-4.4285	49.6950			1022	1023		55	Overcast.
141	156	-4.4258	49.6939			1030	1031		60	Overcast.

Notes:

---

0. Two in-air references are being used: OCN-046 (SeaBOSS) on REF-021 (Ew) and OCN-048 (DalBOSS) on REF-022 (Ea);
the calibrations files are REF021F.CAL and REF022E.CAL, respectively. SeaBOSS is deployed on top of a pole on
the starboard trawl post mast and DalBOSS is deployed as a tethered buoy. On DalBOSS, the Lu sensor is 640 mm
below the steel band (waterline) and the overall length is 1010 mm.
When SeaFALLS (PRO-008) is falling through the water column, the top of the Lu sensor (OCQ-016) is 920 mm below
the pressure port and the Ed sensor (OCH-023) is 325 mm above it. The calibration file is PRO008H.CAL. The
fluorometer inlet port where the funnel attaches) is 70 mm below the pressure port and the conductivity sensor
is 70 mm above. The top of the Lu sensor is 1245 mm from the top of the Ed sensor.
+ indicates simultaneous measurements with DalBOSS; all other casts are for SeaBOSS and SeaFALLS only.
! indicates sampling in a coccolithophore bloom.
1. Cast 1 was recorded on two separate computer systems.
2. Cast 2 was recorded on two separate computer systems.
3. Cast 3 was recorded on two separate computer systems.
4. Cast 4 was recorded on two separate computer systems.
5. Cast 5 was done with no main (large rosette) CTD sampling.
6. Cast 6 was done with no main (large rosette) CTD sampling and was more diffuse than cast 5.
7. Cast 7 was done in a mostly diffuse sky.
8. During cast 8 the profiler moved under the boat during recovery.
9. The sky was more diffuse during cast 8.
10. The illumination field changed quickly during cast 10.
11. Cast 11 was only a little better than cast 10.
12. Cast 12 was the best cast.
13. Cast 13 was done simultaneously with LoCNESS cast 4 and SeaSAS cast 1.
14. Cast 14 was done simultaneously with LoCNESS cast 5 and SeaSAS cast 2.
15. Cast 15 was done simultaneously with LoCNESS cast 6 and SeaSAS cast 3.
16. Cast 16 was done simultaneously with SUnSAS (water) cast 1 and SeaSAS cast 4.
17. Cast 17 was done simultaneously with SUnSAS (water) cast 3 and SeaSAS cast 6.
18. Cast 18 was done simultaneously with SUnSAS (water) cast 5 and SeaSAS cast 8.
19. Cast 19 was done while setting up LoCNESS.
20. Cast 20 was done while setting up LoCNESS.
21. Cast 21 was done simultaneously with LoCNESS cast 7 and SeaSAS cast 10.
22. Cast 22 was done simultaneously with LoCNESS cast 8 and SeaSAS cast 12.
23. Cast 23 was done simultaneously with LoCNESS cast 9 and SeaSAS cast 14.
24. Cast 24 was done right before SUnSAS (water) cast 7 and SeaSAS cast 16.
25. Cast 25 was done simultaneously with SUnSAS (gray) cast 8 and SeaSAS cast 17.
26. Cast 26 was done simultaneously with SUnSAS (gray) cast 10 and SeaSAS cast 19.
27. Cast 27 was done simultaneously with SUnSAS (water) cast 12 and SeaSAS cast 21.
28. Cast 28 was done simultaneously with LoCNESS cast 10 and SeaSAS cast 23.
29. Cast 29 was done simultaneously with LoCNESS cast 12 and SeaSAS cast 26.
30. Cast 30 was done simultaneously with SUnSAS (water) cast 14 and SeaSAS cast 27.
31. Cast 31 was done simultaneously with SUnSAS (water) cast 16 and SeaSAS cast 29.
32. Cast 32 was done simultaneously with SUnSAS (water) cast 18 and SeaSAS cast 31.
33. Cast 33 included DalBOSS and was done simultaneously with SeaSAS cast 33.
34. Cast 34 included DalBOSS and was done simultaneously with SeaSAS cast 34.
35. Cast 35 included DalBOSS and was done simultaneously with SeaSAS cast 37.
36. Cast 36 was done simultaneously with LoCNESS cast 13 and SeaSAS cast 38.
37. Cast 37 was done simultaneously with LoCNESS cast 14 and SeaSAS cast 40.
38. Cast 38 was done simultaneously with LoCNESS cast 15 and SeaSAS cast 42.
39. Cast 39 was done simultaneously with LoCNESS cast 16 and SeaSAS cast 43.
40. Cast 40 was done simultaneously with LoCNESS cast 17 and SeaSAS cast 45.
41. Cast 41 included DalBOSS and was done simultaneously with SUnSAS (water) cast 20 and SeaSAS cast 47.
42. Cast 42 included DalBOSS and was done simultaneously with SUnSAS (water) cast 22 and SeaSAS cast 49.
43. Cast 43 included DalBOSS and was done simultaneously with SUnSAS (water) cast 24 and SeaSAS cast 51.
44. Cast 44 included DalBOSS and was done simultaneously with SUnSAS (water) cast 26 and SeaSAS cast 53.
45. Cast 45 included DalBOSS and was done simultaneously with SUnSAS (water) cast 28 and SeaSAS cast 55.
46. Cast 46 included DalBOSS and was done simultaneously with SUnSAS (water) cast 30 and SeaSAS

cast 57.
47. Cast 47 was done simultaneously with LoCNESS cast 18 and SeaSAS cast 59.
48. Cast 48 was done simultaneously with LoCNESS cast 19 and SeaSAS cast 61.
49. Cast 49 was done simultaneously with LoCNESS cast 20 and SeaSAS cast 63.
50. Cast 50 included DalBOSS and was done simultaneously with SUnSAS (water) cast 32 and SeaSAS cast 64.
51. Cast 51 included DalBOSS and was done simultaneously with SUnSAS (water) cast 34 and SeaSAS cast 66.
52. Cast 52 included DalBOSS and was done simultaneously with SUnSAS (water) cast 36 and SeaSAS cast 68.
53. Cast 53 was done simultaneously with LoCNESS cast 21 and SeaSAS cast 70.
54. Cast 54 was done simultaneously with LoCNESS cast 22 and SeaSAS cast 72.
55. Cast 55 was done simultaneously with LoCNESS cast 23 and SeaSAS cast 74.
56. Cast 56 was done simultaneously with LoCNESS cast 24.
57. Cast 57 was done simultaneously with LoCNESS cast 31 and SeaSAS cast 90.
58. Cast 58 was done simultaneously with LoCNESS cast 32 and SeaSAS cast 91.
59. Cast 59 was done simultaneously with LoCNESS cast 33 and SeaSAS cast 92.
60. Cast 60 included DalBOSS and was done simultaneously with SUnSAS (water) cast 50 and SeaSAS cast 94.
61. Cast 61 included DalBOSS and was done simultaneously with SUnSAS (water) cast 52 and SeaSAS cast 96.
62. Cast 62 was done simultaneously with LoCNESS cast 34 and SeaSAS cast 98.
63. Cast 63 included DalBOSS and was done simultaneously with SUnSAS (water) cast 54 and SeaSAS cast 100.
64. Cast 64 included DalBOSS and was done simultaneously with SUnSAS (water) cast 56 and SeaSAS cast 102.
65. Cast 65 included DalBOSS and was done simultaneously with SUnSAS (water) cast 58 and SeaSAS cast 104.
66. Cast 66 included DalBOSS and was done simultaneously with SUnSAS (water) cast 60 and SeaSAS cast 106.
67. Cast 67 included DalBOSS and was done simultaneously with SUnSAS (water) cast 61 and SeaSAS cast 107.
68. Cast 68 included DalBOSS and was done simultaneously with SUnSAS (water) cast 63 and SeaSAS cast 108.
69. Cast 69 was done simultaneously with SUnSAS (water) cast 81 and SeaSAS cast 127.
70. Cast 70 was done simultaneously with SUnSAS (gray) cast 82 and SeaSAS cast 128.
71. Cast 71 was done simultaneously with SUnSAS (gray) cast 84 and SeaSAS cast 130.
72. Cast 72 was done simultaneously with SUnSAS (gray) cast 86 and SeaSAS cast 132.
73. Cast 73 was done simultaneously with SUnSAS (water) cast 87 and SeaSAS cast 133.
74. Cast 74 was done simultaneously with SUnSAS (water) cast 89 and SeaSAS cast 135.
75. Cast 75 was done simultaneously with SUnSAS (water) cast 91 and SeaSAS cast 137.
76. Cast 76 included DalBOSS and was done simultaneously with SUnSAS (water) cast 107 and SeaSAS cast 153.
77. Cast 77 included DalBOSS and was done simultaneously with SUnSAS (water) cast 113 and SeaSAS cast 159.
78. Cast 78 included DalBOSS and was done simultaneously with SUnSAS (water) cast 114 and SeaSAS cast 160.
79. Cast 79 included DalBOSS and was done simultaneously with SUnSAS (water) cast 115 and SeaSAS cast 161.
80. Cast 80 included DalBOSS and was done simultaneously with SUnSAS (water) cast 117 and SeaSAS cast 163.
81. Cast 81 was done simultaneously with LoCNESS cast 52 and SeaSAS cast 182.
82. Cast 82 was done simultaneously with LoCNESS cast 53 and SeaSAS cast 183.
83. Cast 83 was done simultaneously with LoCNESS cast 54 and SeaSAS cast 184.
84. Cast 84 included DalBOSS and was done simultaneously with SUnSAS (water) cast 159 and SeaSAS cast 208.
85. Cast 85 included DalBOSS and was done simultaneously with SUnSAS (water) cast 160 and SeaSAS cast 209.
86. Cast 86 included DalBOSS and was done simultaneously with SUnSAS (water) cast 162 and SeaSAS cast 211.
87. Cast 87 included DalBOSS and was done simultaneously with SUnSAS (water) cast 164 and SeaSAS cast 213.
88. Cast 88 included DalBOSS and was done simultaneously with SUnSAS (water) cast 186 and SeaSAS cast 232.
89. Cast 89 included DalBOSS and was done simultaneously with SUnSAS (water) cast 188 and SeaSAS cast 234.
90. Cast 90 included DalBOSS and was done simultaneously with SUnSAS (water) cast 190 and SeaSAS cast 236.
91. Cast 91 included DalBOSS and was done simultaneously with SUnSAS (water) cast 191 and SeaSAS cast 237.
92. Cast 92 included DalBOSS (but no SeaBOSS) and was done simultaneously with SUnSAS (water) cast 209 and SeaSAS cast 249.
93. Cast 93 included DalBOSS (but no SeaBOSS) and was done simultaneously with SUnSAS (water) cast 212 and SeaSAS cast 252.
94. Cast 94 included DalBOSS (but no SeaBOSS) and was done simultaneously with SUnSAS (white) cast 214 and SeaSAS cast 254.
95. Cast 95 included DalBOSS (but no SeaBOSS) and was done simultaneously with SUnSAS (white) cast 216 and SeaSAS cast 256.
96. Cast 96 was done simultaneously with SUnSAS (water) cast 236 and SeaSAS cast 274.
97. Cast 97 was done simultaneously with SUnSAS (water) cast 238 and SeaSAS cast 276.
98. Cast 98 was done simultaneously with SUnSAS (water) cast 240 and SeaSAS cast 278.
99. Cast 99 was done simultaneously with SUnSAS (water) cast 250 and SeaSAS cast 285.
SeaFALLS was smashed under the boat after cast 99: two fins broken, one cracked and chipped, and one fin arm bent.
100. Cast 100 was done simultaneously with SUnSAS (water) cast 266 and SeaSAS cast 298.

SeaFALLS was deployed with a set of the original (smaller) fins and was reballasted.

101. Cast 101 was done simultaneously with SUnSAS (gray) cast 268 and SeaSAS cast 300.
102. Cast 102 was done simultaneously with SUnSAS (water) cast 269 and SeaSAS cast 301.
103. Cast 103 was done simultaneously with SUnSAS (water) cast 270 and SeaSAS cast 302.
104. Cast 104 was done simultaneously with SUnSAS (water) cast 272 and SeaSAS cast 304.
105. Cast 105 included DalBOSS and was done simultaneously with SUnSAS (water) cast 277 and SeaSAS cast 306.
106. Cast 106 included DalBOSS and was done simultaneously with SUnSAS (water) cast 279 and SeaSAS cast 308.
107. Cast 107 included DalBOSS and was done simultaneously with SUnSAS (water) cast 281 and SeaSAS cast 310.
108. Cast 108 included DalBOSS and was done simultaneously with SUnSAS (water) cast 283 and SeaSAS cast 312.
109. Cast 109 included DalBOSS and was done simultaneously with SUnSAS (water) cast 284 and SeaSAS cast 313.
110. Cast 110 was done simultaneously with SUnSAS (water) cast 305 and SeaSAS cast 331.
111. Cast 111 was done simultaneously with SUnSAS (water) cast 306 and SeaSAS cast 332.
112. Cast 112 was done simultaneously with SUnSAS (water) cast 307 and SeaSAS cast 333.
113. Cast 113 was done simultaneously with SeaSAS cast 337 and overlapping LoCNESS cast 99.
114. Cast 114 was done simultaneously with SeaSAS cast 338.
115. Cast 115 was done simultaneously with SUnSAS (water) cast 331 and SeaSAS cast 346.
116. Cast 116 was done simultaneously with SUnSAS (water) cast 332 and SeaSAS cast 347.
117. Cast 117 was done overlapping with SUnSAS (water) cast 332 and SeaSAS cast 347.
118. Cast 118 included DalBOSS and was done simultaneously with SUnSAS (water) cast 333 and SeaSAS cast 348.
119. Cast 119 included DalBOSS and was done simultaneously with SUnSAS (water) cast 334 and SeaSAS cast 349.
120. Cast 120 was done simultaneously with SUnSAS (water) cast 336 and SeaSAS cast 351.
121. Cast 121 was done simultaneously with SUnSAS (gray) cast 337 and SeaSAS cast 352.
122. Cast 122 was done simultaneously with LoCNESS cast 105 and SeaSAS cast 353.
123. Cast 123 was done simultaneously with LoCNESS cast 106 and SeaSAS cast 354.
124. Cast 124 was done simultaneously with LoCNESS cast 107 and SeaSAS cast 355.
125. Cast 125 was done simultaneously with LoCNESS cast 108 and SeaSAS cast 356.
126. Cast 126 was done simultaneously with LoCNESS cast 109 and SeaSAS cast 357.
127. Cast 127 was done simultaneously with LoCNESS cast 110 and SeaSAS cast 358.
128. Cast 128 was done simultaneously with LoCNESS cast 111 and SeaSAS cast 360.
129. Cast 129 was done simultaneously with LoCNESS cast 112 and SeaSAS cast 361.
130. Cast 130 was done simultaneously with LoCNESS cast 113 and SeaSAS cast 362.
131. Cast 131 was done simultaneously with SeaSAS cast 375.
132. Cast 132 was done simultaneously with SeaSAS cast 376.
133. Cast 133 was done simultaneously with SeaSAS cast 377.
134. Cast 134 was done simultaneously with SUnSAS (water) cast 349 and SeaSAS cast 378.
135. Cast 135 was done simultaneously with SUnSAS (water) cast 350 and SeaSAS cast 379.
136. Cast 136 was done simultaneously with SUnSAS (water) cast 351 and SeaSAS cast 380.
137. Cast 137 was done simultaneously with SUnSAS (water) cast 352 and SeaSAS cast 381.
138. Cast 138 was done simultaneously with SUnSAS (water) cast 353 and SeaSAS cast 382.
139. Cast 139 was done simultaneously with SUnSAS (water) cast 354 and SeaSAS cast 383.
140. Cast 140 was done simultaneously with SUnSAS (water) cast 355 and SeaSAS cast 384.
141. Cast 141 was done simultaneously with SUnSAS (water) cast 356 and SeaSAS cast 385.

Stan Hooker

AMT-8 (25 April to 7 June 1999) SeaSAS Log for the Sequential Day of the Year (SDY) with all times reported in GMT
(SDY 128 is 8 May and SDY 156 is 5 June).

Cast No.	SDY	Position Longitude	Position Latitude	Darks Ei/Es	Darks Li/Lt	Sampling Beg.	Sampling End	Li Views	CCD Pic.	Stability Li Lt Es	Sky Conditions Around the Sun
1	128	-29.5651	-24.5547	1425	1425	1513	1516	Cloud			Clear.
2	128	-29.5668	-24.5540			1521	1524	Sky/Cloud			Clear.
3	128	-29.5686	-24.5537			1530	1533	Sky/Cloud			Clear.
4	129	-25.8171	-22.2290	1334	1334	1402	1402	No Data			Clear.
5	129	-25.8178	-22.2280			1407	1410	No Data			Clear.
6	129	-25.8182	-22.2277			1410	1413	No Data			Clear.
7	129	-25.8191	-22.2272			1416	1419	No Data			Clear.
8	129	-25.8201	-22.2267			1420	1423	No Data			Clear.
9	129	-25.8211	-22.2263			1423	1426	No Data			Clear.
10	129	-25.8267	-22.2244			1443	1446	Sky/Cloud			Clear, with some cirrus.
11	129	-25.8276	-22.2244			1447	1450	Sky			Clear.
12	129	-25.8285	-22.2245			1453	1456	Sky/Cloud	1458		Clear.
13	129	-25.8289	-22.2245			1456	1459	Sky/Cloud			Clear.
14	129	-25.8294	-22.2247			1500	1503	Cloud			Clear.
15	129	-25.8300	-22.2246			1504	1507	Sky/Cloud			Clear.
16	130	-23.2209	-19.2100	1124	1124	1145	1148	Sky			Clear.
17	130	-23.2211	-19.2096			1149	1152	Sky			Clear.
18	130	-23.2212	-19.2093			1153	1156	Sky			Clear.
19	130	-23.2216	-19.2090			1202	1205	Sky			Clear.
20	130	-23.2219	-19.2084			1208	1211	Bad Data			Clear, ship moved during the cast.
21	130	-23.2232	-19.2062			1213	1216	Sky			Clear.
22	130	-23.2248	-19.2042			1218	1221	Sky	1219		Clear.
23	130	-23.0388	-18.9923			1413	1413	Sky			Clear.
24	130	-23.0398	-18.9921			1417	1420	Sky/Cloud			Clear, cloud at the end of the cast.
25	130	-23.0420	-18.9915			1427	1430	Sky			Clear.
26	130	-23.0437	-18.9909			1435	1438	Sky			Clear.
27	130	-23.0467	-18.9903			1449	1452	Sky			Clear.
28	130	-23.0477	-18.9902			1454	1458	Sky			Clear.
29	130	-23.0484	-18.9900			1459	1502	Sky/Cloud			Clear.
30	130	-23.0491	-18.9898			1503	1506	Cloud			Clear.
31	130	-23.0508	-18.9891			1513	1516	Sky			Clear.
32	130	-23.0514	-18.9889			1517	1520	Sky/Cloud			Clear.
33	130	-23.0543	-18.9885			1535	1538	Sky	1539		Clear.
34	130	-23.0555	-18.9880			1544	1547	Sky			Clear.
35	130	-23.0567	-18.9876			1550	1553	Sky			Clear.
36	130	-23.0577	-18.9876			1555	1558	Sky/Cloud			Clear.
37	130	-23.0590	-18.9872			1602	1605	Sky/Cloud			Clear, cloud at the end of the cast.
38	131	-20.5361	-16.0447	1151	1151	1215	1218	Sky/Cloud			Clear.
39	131	-20.5365	-16.0446			1219	1222	Sky/Cloud			Clear, small cloud at the end of the cast.
40	131	-20.5370	-16.0444			1223	1226	Sky/Cloud			Cloudy, sun at the end of the cast.
41	131	-20.5371	-16.0446			1227	1227	Cloud			Clear.
42	131	-20.3917	-15.8630			1417	1420	Sky			Cloudy, sun at the end of the cast.
43	131	-20.3923	-15.8622			1422	1425	Sky			Clear.
44	131	-20.3929	-15.8617			1426	1429	Sky			Clear.
45	131	-20.3933	-15.8614			1431	1434	Sky			Clear.
46	131	-20.3937	-15.8614			1435	1438	Sky	1436		Clear.
47	131	-20.3960	-15.8576			1500	1503	Sky			Clear.
48	131	-20.3965	-15.8568			1504	1507	Sky			Clear.
49	131	-20.3995	-15.8540			1526	1529	Sky			Clear.
50	131	-20.4001	-15.8536			1531	1534	Sky			Clear, cloud at the end of the cast.
51	131	-20.4010	-15.8527			1538	1541	Sky			Clear.
52	131	-20.4014	-15.8523			1542	1545	Sky			Clear.
53	132	-18.1270	-13.1682	1000	1000	1055	1058	Sky/Cloud			Clear.
54	132	-18.1273	-13.1679			1059	1102	Sky			Clear.
55	132	-18.1283	-13.1661			1105	1108	Sky			Clear.
56	132	-18.1294	-13.1648			1109	1112	Sky	1110		Clear.
57	132	-18.1337	-13.1615			1124	1127	Sky			Clear.
58	132	-18.1355	-13.1604			1131	1134	Sky			Clear.
59	132	-17.9123	-12.8890			1338	1341	Sky			Clear.
60	132	-17.9132	-12.8886			1341	1344	Sky			Clear.
61	132	-17.9147	-12.8882			1347	1350	Sky			Clear.
62	132	-17.9154	-12.8879			1350	1353	Sky	1352		Clear.
63	132	-17.9223	-12.8847			1409	1412	Sky/Cloud			Cloudy at start, then clear until the end of the cast.
64	133	-15.4025	-9.8587	0954	0954	1042	1045	Sky/Cloud			Clear, cloud at the end of the cast.

65	133	-15.4032	-9.8588			1047	1050	Sky		Clear at start, then cloudy.
66	133	-15.4042	-9.8585			1053	1056	Sky	1058	Clear, cloud edge at the end of the cast.
67	133	-15.4049	-9.8582			1057	1100	Sky		Clear, small cloud edge at the end of the cast.
68	133	-15.4065	-9.8574			1104	1107	Sky		Clear.
69	133	-15.4076	-9.8564			1108	1111	Sky/Cloud		Clear, small cloud in the middle of the cast.
70	133	-15.2138	-9.6052			1306	1309	Sky		Clear.
71	133	-15.2156	-9.6041			1310	1313	Sky		Clear.
72	133	-15.2173	-9.6036			1315	1318	Sky		Clear.
73	133	-15.2188	-9.6034			1320	1323	Sky	1322	Clear.
74	133	-15.2200	-9.6030			1324	1327	Sky		Clear, small cloud in the middle of the cast.
75	133	-15.2210	-9.6027			1327	1330	Sky/Cloud		Clear.
76*	133	-15.2313	-9.5920			1345	1348	Sky		Clear.
77*	133	-15.2339	-9.5871			1349	1352	Sky/Cloud		Clear.
78*	133	-15.2370	-9.5678			1402	1405	Sky		Clear.
79*	133	-15.2394	-9.5643			1405	1408	Sky		Clear.
80*	133	-15.2427	-9.5594			1409	1412	Sky		Clear.
81*	133	-15.2452	-9.5557			1412	1415	Sky		Clear.
82	139	-15.5310	-4.1195	1013	1013	1039	1042	Sky/Cloud		Clear with high haze.
83	139	-15.5314	-4.1197			1043	1046	Sky/Cloud		Clear with high haze and some small clouds.
84	139	-15.5310	-4.1208			1050	1053	Sky/Cloud		Clear with high haze and cloud edges at start.
85	139	-15.5308	-4.1209			1054	1057	Cloud		Clear with high haze.
86	139	-15.5309	-4.1209			1057	1100	Sky/Cloud	1102	Clear with high haze.
87	139	-15.6181	-3.8713			1320	1323	Sky/Cloud		Cirrus clouds.
88	139	-15.6199	-3.8728			1327	1330	Sky	1330	Cirrus clouds.
89	139	-15.6212	-3.8739			1332	1335	Sky		Cirrus clouds.
90	140	-16.7110	-0.0753	0950	0950	1037	1040	Cloud		Thin high cumulus clouds; cloud edge in middle.
91	140	-16.7097	-0.0740			1048	1051	Sky/Cloud		Thin high cumulus clouds.
92	140	-16.7087	-0.0735			1056	1059	Cloud		Thin high cumulus clouds; cloud in middle of cast.
93	140	-16.7068	-0.0724			1109	1111	Sky/Cloud	1118	Thin high cumulus clouds; cloud at the end of cast.
94	140	-16.7995	0.2318			1311	1314	Sky/Cloud		Thin high cirrus clouds.
95	140	-16.7995	0.2328			1315	1318	Sky/Cloud	1319	Thin high cirrus clouds.
96	140	-16.7998	0.2348			1322	1325	Sky/Cloud		Thin high cirrus clouds; cloud at the end of the cast.
97	140	-16.8000	0.2360			1326	1329	Sky/Cloud		Thin high cirrus clouds; cloud at the end of the cast.
98	140	-16.8018	0.2417			1343	1346	Sky/Cloud		Thin high cirrus clouds.
99	140	-16.8046	0.2440			1350	1353	Cloud		Thin high cirrus clouds; cloud in middle to end.
100	141	-17.8834	3.8994	0946	0946	1037	1040	Sky/Cloud		Thin high cirrus clouds.
101	141	-17.8834	3.8996			1041	1044	Sky/Cloud		Thin high cirrus clouds.
102	141	-17.8833	3.9001			1047	1050	Sky/Haze		Thin high cirrus clouds.
103	141	-17.8833	3.9003			1051	1054	Sky/Haze		Thin high cirrus clouds.
104	141	-17.8835	3.9006			1055	1058	Sky/Haze		Thin high cirrus clouds.
105	141	-17.8836	3.9012			1059	1102	Sky/Cloud	1108	Thin high cirrus clouds.
106	141	-17.8839	3.9022			1108	1111	Sky/Cloud		Cloudy with brightening in the middle of the cast.
107#	141	-17.8839	3.9026			1115	1118	Sky/Cloud		Thin high cirrus clouds.
108#	141	-17.8838	3.9027			1118	1121	Sky		Thin high cirrus clouds.
109#	141	-17.8838	3.9028			1121	1124	Sky/Cloud		Thin high cirrus clouds.
110#	141	-17.8838	3.9030			1125	1128	Sky/Cloud		Thin high cirrus clouds.
111#	141	-17.8837	3.9032			1129	1132	Sky/Cloud		Thin high cirrus clouds.
112#	141	-17.8837	3.9034			1132	1135	Sky/Haze		Thin high cirrus clouds.
113#	141	-17.8837	3.9038			1136	1139	Sky/Cloud		Thin high cirrus clouds.
114#	141	-18.0119	4.3128			1403	1406	Sky		Thin high cirrus clouds.

115# 141 -18.0121 4.3126 1406 1409 Sky Thin high cirrus clouds.
116# 141 -18.0124 4.3126 1409 1412 Sky Thin high cirrus clouds.
117# 141 -18.0128 4.3125 1413 1416 Sky Thin high cirrus clouds.
118# 141 -18.0133 4.3123 1417 1420 Sky Thin high cirrus clouds.
119# 141 -18.0137 4.3121 1420 1423 Sky Thin high cirrus clouds.
120# 141 -18.0143 4.3119 1424 1427 Sky Thin high cirrus clouds.
121# 141 -18.0148 4.3116 1428 1431 Sky/Haze Thin high cirrus clouds.
122# 141 -18.0152 4.3114 1432 1435 Sky/Haze 1433 Thin high cirrus clouds.
123# 141 -18.0152 4.3110 1436 1439 Sky/Haze Thin high cirrus clouds.
124* 141 -18.0188 4.3112 1446 1449 Sky/Haze Thin high cirrus clouds.
125* 141 -18.0242 4.3126 1450 1453 Sky/Haze Thin high cirrus clouds.
126* 141 -18.0283 4.3137 1453 1456 Sky/Haze Thin high cirrus clouds.
127 142 -18.9875 7.6207 0947 0947 1038 1041 Haze Clear with high haze.
128 142 -18.9871 7.6209 1042 1045 Haze Clear with high haze.
129 142 -18.9870 7.6210 1046 1049 Haze/Cloud Clear with high haze; cloud edge at the end of the cast.
130 142 -18.9870 7.6210 1049 1052 Haze/Cloud Clear with high haze.
131 142 -18.9868 7.6210 1053 1056 Haze/Cloud 1054 Clear with high haze.
132 142 -18.9864 7.6211 1056 1059 Haze/Cloud Clear with high haze.
133# 142 -18.9856 7.6216 1103 1106 Haze Clear with high haze.
134# 142 -18.9855 7.6219 1107 1110 Haze Clear with high haze.
135# 142 -18.9853 7.6220 1110 1113 Haze Clear with high haze.
136# 142 -18.9853 7.6220 1113 1116 Haze Clear with high haze.
137# 142 -18.9852 7.6222 1118 1121 Haze/Cloud Clear with high haze.
138# 142 -18.9850 7.6222 1121 1124 Haze/Cloud Clear with high haze.
139# 142 -18.9848 7.6222 1124 1127 Haze Clear with high haze.
140 142 -19.0524 7.8400 1250 1253 Haze Clear with high haze.
141 142 -19.0516 7.8409 1254 1257 Haze Clear with high haze.
142 142 -19.0510 7.8413 1257 1300 Haze Clear with high haze.
143 142 -19.0500 7.8419 1301 1304 Haze Clear with high haze.
144 142 -19.0493 7.8421 1304 1307 Haze/Cloud Clear with high haze.
145 142 -19.0483 7.8426 1308 1311 Haze/Cloud 1308 Clear with high haze.
146$ 142 -19.0459 7.8440 1318 1321 Haze Clear with high haze.
147$ 142 -19.0448 7.8442 1322 1325 Haze Clear with high haze.
148$ 142 -19.0437 7.8445 1326 1329 Haze Clear with high haze.
149$ 142 -19.0425 7.8448 1330 1333 Haze Clear with high haze.
150$ 142 -19.0416 7.8450 1334 1337 Cloud Clear with high haze.
151$ 142 -19.0413 7.8453 1338 1341 Haze/Cloud Clear with high haze.
152$ 142 -19.0415 7.8454 1342 1345 Haze/Cloud Clear with high haze.
153 143 -20.1479 11.5645 0954 0954 1042 1045 Haze Clear with high haze.
154 143 -20.1476 11.5646 1045 1048 Haze Clear with high haze; cloudy at the end of the cast.
155* 143 -20.2542 11.8745 1302 1305 Haze Clear with high haze; cloudy at the end of the cast.
156* 143 -20.2526 11.8839 1309 1312 Sky/Haze Clear with high haze; cloud edges in middle of cast.
157* 143 -20.2515 11.8907 1314 1317 Haze/Cloud Clear with high

158*	143	-20.2559	11.9078			1324	1327	Haze/Cloud		Clear with high haze; cloud edges in middle of cast.
159	143	-20.2589	11.9183			1352	1355	Haze/Cloud		Clear with high haze at start; cloudy to end of cast.
160	143	-20.2593	11.9178			1405	1408	Haze/Cloud		Cloud edges for haze; cloud edges at end of cast.
161	143	-20.2595	11.9177			1410	1413	Haze/Cloud		Clear with high the entire cast.
162	143	-20.2597	11.9175			1413	1416	Haze	1415	Clear with high haze.
163	143	-20.2598	11.9171			1418	1421	Haze/Cloud		Clear with high haze.
164	143	-20.2601	11.9170			1422	1425	Haze		Clear with high haze.
165	144	-20.9986	15.1502	1001	1001	1053	1056	Sky/Haze		Clear with high haze.
166	144	-20.9984	15.1502			1056	1059	Sky/Haze		Clear with high haze.
167	144	-20.9986	15.1501			1101	1104	Sky/Haze		Clear with high haze.
168	144	-20.9986	15.1501			1104	1107	Sky/Haze		Clear with high haze.
169	144	-20.9984	15.1502			1107	1110	Sky/Haze	1109	Clear with high haze.
170	144	-20.9980	15.1503			1111	1114	Sky/Haze		Clear with high haze.
171	144	-20.9979	15.1502			1115	1118	Sky/Haze		Clear with high haze.
172	144	-20.9978	15.1501			1118	1121	Sky/Haze		Clear with high haze.
173	144	-20.9977	15.1502			1122	1124	Sky/Haze		Clear with high haze.
174	144	-20.9977	15.1496			1126	1129	Sky/Haze		Clear with high haze.
175#	144	-20.9997	15.1502			1231	1234	Sky/Haze		Clear with high haze.
176#	144	-20.9994	15.1507			1234	1237	Sky/Haze		Clear with high haze.
177#	144	-20.9996	15.1513			1238	1241	Sky/Haze		Clear with high haze.
178#	144	-20.9997	15.1515			1242	1245	Sky/Haze		Clear with high haze.
179#	144	-20.9996	15.1514			1246	1249	Sky/Haze		Clear with high haze.
180#	144	-20.9994	15.1510			1249	1252	Sky/Haze		Clear with high haze.
181#	144	-20.9992	15.1510			1253	1256	Sky/Haze	1254	Clear with high haze.
182	144	-20.9998	15.1508			1314	1317	Sky/Haze		Clear with high haze.
183	144	-20.9997	15.1509			1320	1323	Sky/Haze		Clear with high haze.
184	144	-20.9995	15.1510			1325	1328	Sky/Haze		Clear with high haze.
185	144	-20.9999	15.1511			1337	1340	Sky/Haze		Clear with high haze.
186	144	-21.0001	15.1510			1340	1343	Sky/Haze		Clear with high haze.
187	144	-21.0003	15.1511			1343	1346	Sky/Haze		Clear with high haze.
188	144	-21.0006	15.1510			1347	1350	Sky/Haze		Clear with high haze.
189*	144	-21.0008	15.1546			1354	1357	Sky/Haze		Clear with high haze.
190*	144	-21.0006	15.1601			1358	1401	Sky/Haze		Clear with high haze.
191*	144	-21.0004	15.1642			1401	1404	Sky/Haze		Clear with high haze.
192	145	-20.9996	18.8022	0945	0945	1035	1038	Sky/Cloud		Cloudy.
193	145	-20.9992	18.8024			1039	1042	Cloud		Cloudy with brightening.
194	145	-20.9991	18.8026			1043	1046	Cloud		Cloudy.
195	145	-20.9989	18.8025			1047	1050	Cloud	1051	Cloudy with brightening.
196	145	-20.9982	18.8039			1059	1102	Sky/Cloud		Clear then cloudy.
197	145	-20.9979	18.8046			1103	1105	Sky/Cloud		Clear, cloudy, clear, and then cloudy.
198	145	-20.9973	18.8057			1113	1116	Sky/Cloud		Clear and cloudy.
199	145	-20.9970	18.8066			1117	1120	Cloud		Clear then cloudy.
200	145	-20.9970	19.3093			1407	1410	Cloud		Cloudy with a little brightening.
201	145	-20.9966	19.3099			1410	1413	Cloud		Cloudy with brightening.
202	145	-20.9955	19.3107			1422	1425	Cloud	1427	Clear then cloudy.

203	145	-20.9943	19.3124			1428	1431	Cloud		Clear with some brightening.
204	145	-20.9940	19.3129			1432	1435	Cloud		Cloudy with a little brightening.
205	145	-20.9938	19.3133			1436	1439	Cloud		Cloudy with a little brightening.
206	145	-20.9935	19.3136			1440	1443	Cloud		Cloudy then brightening at the end of the cast.
207	145	-20.9918	19.3154			1449	1452	Sky/Cloud		Clear then cloudy towards the end of the cast.
208	146	-21.0071	22.9116	0954	0954	1044	1047	Sky/Cloud		Clear with thin cirrus; cloud at the end of the cast.
209	146	-21.0075	22.9122			1058	1101	Sky/Cloud		Clear with thin cirrus.
210	146	-21.0077	22.9122			1101	1104	Sky/Cloud	1103	Clear with thin cirrus.
211	146	-21.0079	22.9124			1106	1109	Sky/Cloud		Clear with thin cirrus; cloud edge in the middle.
212	146	-21.0080	22.9127			1111	1114	Sky/Cloud		Clear with thin cirrus; cloud edge at the end.
213	146	-21.0081	22.9129			1114	1117	Sky/Cloud		Clear with thin cirrus.
214	146	-21.0684	23.2770			1332	1335	Sky		Clear.
215	146	-21.0711	23.2756			1338	1341	Sky/Cloud	1346	Clear.
216	146	-21.0735	23.2741			1349	1352	Sky		Clear.
217	146	-21.0748	23.2733			1353	1356	Sky		Clear.
218	146	-21.0759	23.2726			1356	1359	Sky		Clear.
219	146	-21.0776	23.2717			1400	1403	Sky		Clear.
220*	146	-21.0860	23.2701			1409	1412	Sky		Clear.
221*	146	-21.0924	23.2699			1412	1415	Sky		Clear.
222*	146	-21.0987	23.2697			1415	1418	Sky		Clear.
223*	146	-21.1116	23.2696			1422	1425	Sky		Clear.
224*	146	-21.1176	23.2694			1426	1429	Sky		Clear.
225*	146	-21.1221	23.2693			1429	1432	Sky		Clear.
226*	146	-21.1423	23.2707			1438	1441	Sky		Clear.
227*	146	-21.1504	23.2714			1441	1444	Sky		Clear.
228*	146	-21.1585	23.2722			1444	1447	Sky		Clear.
229*	146	-21.1760	23.2740			1450	1453	Sky		Clear.
230*	146	-21.1858	23.2751			1453	1456	Sky		Clear.
231*	146	-21.1990	23.2767			1457	1500	Sky		Clear, small cloud edges at the end of the cast.
232	147	-21.8057	26.6931	0928	0928	1045	1048	Sky/Cloud		Clear.
233	147	-21.8050	26.6935			1049	1052	Sky		Clear.
234	147	-21.8046	26.6939			1053	1056	Sky		Clear, cloud edge at the end of the cast.
235	147	-21.8042	26.6939			1057	1100	Sky/Cloud	1058	Clear.
236	147	-21.8032	26.6942			1103	1106	Sky/Cloud		Clear.
237	147	-21.8021	26.6951			1112	1115	Sky/Cloud		Clear.
238	147	-21.8720	27.0508			1338	1341	Sky		Clear with thin cirrus.
239	147	-21.8725	27.0507			1342	1345	Sky/Cloud		Clear with thin cirrus.
240	147	-21.8741	27.0505			1349	1352	Sky/Cloud		Clear with thin cirrus.
241	147	-21.8749	27.0505			1352	1355	Sky/Cloud	1354	Clear with thin cirrus.
242@	147	-21.8758	27.0505			1404	1407	Sky/Cloud		Clear with thin cirrus.
243@	147	-21.8762	27.0505			1409	1412	Sky/Cloud		Clear with thin cirrus.
244@	147	-21.8772	27.0505			1414	1417	Sky/Cloud		Clear with thin cirrus.
245@	147	-21.8813	27.0504			1425	1428	Sky		Clear with thin cirrus.
246@	147	-21.8824	27.0504			1428	1431	Sky/Cloud		Clear with thin cirrus.
247@	147	-21.8835	27.0504			1432	1435	Sky/Cloud		Clear with thin cirrus.
248	147	-21.8860	27.0503			1442	1445	Sky/Cloud		Clear with thin cirrus.
249	148	-21.5607	30.4764	0955	0955	1033	1036	Cloud		Overcast with slow brightening.
250	148	-21.5608	30.4768			1037	1040	Cloud		Overcast with some brightening.
251	148	-21.5606	30.4769			1041	1044	Cloud		Overcast with a little brightening.
252	148	-21.5608	30.4776			1046	1049	Cloud		Overcast with brightening.
253	148	-21.5605	30.4781			1050	1053	Cloud	1051	Overcast.
254	148	-21.5601	30.4805			1101	1104	Cloud		Overcast.
255	148	-21.5602	30.4812			1104	1107	Cloud		Overcast.
256	148	-21.5602	30.4820			1108	1111	Cloud		Overcast.
257	148	-21.5601	30.4826			1112	1115	Cloud		Overcast.
258*	148	-21.5586	30.4963			1124	1127	Cloud		Overcast.
259*	148	-21.5579	30.5039			1127	1130	Cloud		Overcast.

260*	148	-21.5570	30.5140			1131	1134	Cloud		Overcast with brightening.
261*	148	-21.5005	30.9293			1350	1353	Cloud		Overcast with darkening.
262*	148	-21.4995	30.9351			1353	1356	Cloud		Overcast with darkening.
263*	148	-21.4984	30.9409			1356	1359	Cloud		Overcast.
264*	148	-21.4971	30.9486			1400	1403	Cloud	1407	Overcast.
265	148	-21.4981	30.9547			1409	1412	Cloud		Overcast.
266	148	-21.4992	30.9544			1414	1417	Cloud		Overcast with brightening.
267	148	-21.4998	30.9542			1418	1421	Cloud		Overcast with brightening at the end of the cast.
268	148	-21.5003	30.9540			1421	1424	Cloud		Overcast with slow brightening.
269	148	-21.5008	30.9538			1425	1428	Cloud		Overcast with slow brightening.
270	148	-21.5013	30.9535			1429	1432	Cloud		Overcast with darkening.
271*	148	-21.5086	30.9531			1439	1442	Cloud		Overcast.
272*	148	-21.5135	30.9531			1442	1445	Cloud		Overcast.
273*	148	-21.5199	30.9530			1446	1449	Cloud		Overcast.
274	149	-20.7876	34.3650	1010	1010	1050	1053	Sky		Clear.
275	149	-20.7877	34.3643			1054	1057	Sky	1055	Clear.
276	149	-20.7873	34.3635			1100	1103	Sky		Clear, cloud edge in the middle of the cast.
277	149	-20.7877	34.3634			1104	1107	Sky		Clear.
278	149	-20.7883	34.3630			1112	1115	Sky/Cloud		Clear, cloud in the middle of the cast.
279	149	-20.7886	34.3629			1115	1118	Sky/Cloud		Clear, cloud at the end of the cast.
280	149	-20.6917	34.5497			1305	1308	Sky/Cloud	1313	Clear, cloud edges in the middle of the cast.
281	149	-20.6922	34.5504			1314	1317	Sky/Cloud		Clear, cloud in the middle of the cast.
282	149	-20.6923	34.5503			1320	1323	Sky/Cloud		Clear.
283	149	-20.6924	34.5503			1326	1329	Sky		Clear.
284	149	-20.6924	34.5502			1330	1333	Sky		Clear, cloud in the middle of the cast.
285	150	-20.0143	38.1779	1010	1010	1034	1037	Sky		Clear.
286	150	-20.0148	38.1773			1038	1041	Sky/Cloud	1039	Clear, small cloud in the middle of the cast.
287	150	-20.0163	38.1753			1053	1056	Sky		Clear.
288	150	-20.0165	38.1747			1056	1059	Sky/Cloud		Clear.
289	150	-20.0177	38.1742			1103	1106	Cloud		Overcast with light rain.
290	150	-20.0042	38.6417			1405	1408	Sky/Cloud		Overcast with slow brightening.
291	150	-20.0048	38.6418			1408	1411	Sky/Cloud		Overcast with slow brightening.
292	150	-20.0061	38.6424			1413	1416	Sky/Cloud	1419	Overcast with slow brightening.
293	150	-20.0071	38.6435			1425	1428	Sky		Clear with thin cumulus.
294	150	-20.0072	38.6438			1429	1432	Sky		Clear with thin cumulus.
295	150	-20.0075	38.6442			1434	1437	Sky		Clear with thin cumulus.
296	150	-20.0084	38.6452			1438	1441	Sky/Cloud		Clear with thin cumulus.
297	151	-20.0001	42.0019	1011	1011	1042	1045	Cloud		Overcast.
298	151	-20.0000	42.0021			1045	1048	Cloud		Overcast.
299	151	-20.0000	42.0026			1049	1052	Cloud	1051	Overcast with slow brightening.
300	151	-20.0000	42.0026			1049	1052	Cloud		Overcast with slow brightening.
301	151	-19.9962	42.0076			1121	1124	Sky/Cloud		Clear then cloudy.
302	151	-20.0079	42.2642			1304	1307	Sky/Cloud		Clear, very small cloud at the end of the cast.
303	151	-20.0076	42.2643			1308	1311	Sky/Cloud	1309	Clear.
304	151	-20.0064	42.2664			1315	1318	Sky		Clear, small cloud in the middle of the cast.
305	151	-20.0058	42.2672			1318	1321	Sky		Clear.
306	152	-19.9783	45.9438	0942	0942	1014	1017	Sky/Cloud		Clear with thin cirrus.
307	152	-19.9784	45.9437			1018	1021	Sky/Cloud		Clear with thin cirrus.
308	152	-19.9788	45.9440			1024	1027	Sky/Cloud	1025	Clear with thin cirrus.
309	152	-19.9794	45.9442			1028	1031	Sky/Cloud		Clear with thin cirrus.
310	152	-19.9798	45.9445			1031	1034	Sky/Cloud		Clear with thin cirrus.
311	152	-19.9800	45.9450			1035	1038	Sky/Cloud		Clear with thin cirrus.

312 152 -19.9803 45.9453 1039 1042 Sky/Cloud Clear with thin cirrus.
313 152 -19.9812 45.9459 1045 1048 Sky/Cloud Clear with thin cirrus.
314 152 -19.9818 45.9463 1054 1057 Cloud Clear with thin cirrus (a litle prop wash early in cast).
315 152 -19.9814 45.9470 1058 1101 Cloud Clear with thin cirrus (prop wash at the end of the cast).
316 152 -20.0039 46.3760 1333 1336 Sky/Cloud Clear with thin cirrus.
317 152 -20.0036 46.3752 1336 1339 Sky/Cloud 1338 Clear with cirrus.
318 152 -20.0030 46.3740 1342 1345 Cloud Clear with cirrus.
319 152 -20.0025 46.3727 1348 1351 Cloud Cirrus and thin cumulus.
320 152 -20.0027 46.3709 1355 1358 Sky/Cloud Cloudy with brightening.
321 153 -15.6636 47.4542 1000 1000 1038 1041 Cloud Overcast with slow brightening.
322 153 -15.6645 47.4546 1043 1046 Cloud 1045 Overcast with some brightening.
323 153 -15.6653 47.4552 1049 1052 Sky/Cloud Overcast.
324 153 -15.6660 47.4555 1053 1056 Cloud Overcast.
325 153 -15.6665 47.4558 1056 1059 Cloud Overcast.
326 153 -15.6671 47.4561 1100 1103 Cloud Overcast.
327 153 -15.6678 47.4563 1103 1106 Cloud Overcast.
328 153 -15.6686 47.4566 1107 1110 Cloud Overcast.
329 153 -15.6691 47.4569 1110 1113 Cloud Overcast with slow brightening.
330 153 -15.6697 47.4572 1114 1117 Cloud Overcast.
331 153 -14.7766 47.5429 1524 1527 Cloud Cloudy, bright, cloudy, bright, and then cloudy.
332 153 -14.7784 47.5429 1535 1535 Cloud Cloudy.
333 153 -14.7801 47.5427 1541 1544 Cloud Cloudy.
334 153 -14.7808 47.5424 1550 1553 Cloud Cloudy (prop wash 1.5 minutes into the cast).
335 154 -9.6645 48.1486 0909 1029 1051 1054 Sky Clear.
336 154 -9.6647 48.1487 1102 1105 Sky/Cloud Clear.
337 154 -9.6648 48.1488 1106 1109 Sky 1111 Clear.
338 154 -9.6650 48.1488 1113 1116 Cloud Clear, cloud at the end of the cast.
339 154 -9.6653 48.1487 1117 1120 Cloud Clear, cloud at the end of the cast.
340 154 -9.4098 48.2132 1249 1252 Sky/Cloud Clear.
341 154 -9.4120 48.2132 1252 1255 Sky 1255 Clear.
342 154 -9.4147 48.2127 1258 1301 Sky/Cloud Clear.
343 154 -9.4156 48.2125 1301 1304 Sky/Cloud Clear.
344 154 -9.4165 48.2120 1305 1308 Sky Clear.
345 154 -9.4181 48.2118 1309 1312 Sky Clear.
346 154 -9.4233 48.2121 1325 1328 Sky/Cloud Clear, cloud at the end of the cast.
347 154 -9.4270 48.2122 1334 1337 Sky/Cloud Clear, cloud at the end of the cast.
348 154 -9.4284 48.2121 1337 1340 Sky/Cloud Clear.
349 154 -9.4303 48.2123 1342 1345 Sky Clear.
350 154 -9.4310 48.2122 1345 1348 Sky/Cloud Clear, small cloud edge in the middle of the cast.
351 154 -9.4335 48.2115 1352 1355 Sky/Cloud Clear.
352 154 -9.4347 48.2113 1356 1359 Sky Clear.
353 154 -9.2358 48.2543 1506 1509 Sky Clear with thin cirrus.
354 154 -9.2366 48.2547 1509 1512 Sky Clear with thin cirrus.
355 154 -9.2375 48.2551 1513 1516 Sky Clear with thin cirrus.
356 154 -9.2385 48.2554 1517 1520 Sky 1519 Clear with thin cirrus.
357 154 -9.2392 48.2555 1520 1523 Sky/Cloud Clear with thin cirrus.
358 154 -9.2400 48.2557 1524 1527 Sky/Cloud Clear with thin cirrus.
359 154 -9.2406 48.2560 1528 1531 Sky Clear with thin cirrus.
360 154 -9.2419 48.2565 1532 1535 Sky/Cloud Clear with thin cirrus.
361 154 -9.2433 48.2571 1536 1539 Sky Clear with thin cirrus.
362 154 -9.2446 48.2576 1539 1542 Sky/Cloud Clear with thin cirrus, cloud at the end of the cast.
363! 155 -9.2503 48.9774 1021 1021 1052 1055 Cloud Cirrus, cloud edges at the end of the cast.
364! 155 -9.2506 48.9760 1059 1102 Cloud 1105 Cirrus, cloud edges in the middle of the cast.
365! 155 -9.2509 48.9749 1105 1108 Cloud Cirrus, cloud at the end of the cast.
366! 155 -9.2531 48.9720 1116 1119 Cloud Cirrus.

367!	155	-9.2534	48.9709			1120	1123	Cloud		Cirrus with a little brightening.
368!	155	-9.2539	48.9702			1123	1126	Cloud		Cirrus with a little darkening.
369!	155	-9.1805	48.9836			1254	1257	Cloud		Overcast.
370!	155	-9.1830	48.9833			1307	1309	Cloud	1310	Overcast with brightening.
371!	155	-9.1848	48.9831			1311	1314	Cloud		Overcast with darkening.
372!	155	-9.1860	48.9832			1315	1317	Cloud		Overcast.
373!	155	-9.1890	48.9824			1321	1322	Cloud		Overcast (a very small amount of rain).
374!	155	-9.1963	48.9802			1333	1336	Cloud		Overcast (prop wash 1.5 minutes into the cast).
375!	155	-8.8705	49.0310			1509	1512	Cloud	1506	Overcast with slow darkening.
376!	155	-8.8712	49.0310			1512	1515	Cloud		Overcast with slow brightening.
377!	155	-8.8723	49.0311			1517	1520	Cloud		Overcast with slow darkening (and very light rain).
378	156	-4.4464	49.7001	0913	0913	0935	0938	Cloud		Overcast.
379	156	-4.4443	49.6993			0939	0942	Cloud		Overcast.
380	156	-4.4428	49.6989			0942	0945	Sky	0945	Overcast.
381	156	-4.4344	49.6973			1004	1004	Sky/Cloud		Clear, cloud in the middle of the cast.
382	156	-4.4326	49.6966			1008	1011	Sky/Cloud		Clear, cloud at the end of the cast.
383	156	-4.4299	49.6955			1016	1019	Sky/Cloud		Clear, cloud in the middle and end of the cast.
384	156	-4.4286	49.6950			1022	1022	Cloud		Overcast with brightening.
385	156	-4.4259	49.6940			1030	1030	Cloud		Overcast with darkening.

Notes:

---

0. The Es sensor is OCM-035 and the Ei sensor is OCM-095 on MVD-013 (MVD013L.CAL).
   The Li sensor is OCT-069 on OCP-019 (OCP019F.CAL) and the Lt sensor is OCT-075 on MVD-020 (MVD-020A.CAL).
   The directional data is being provided by SeaSAS: DIR-001 on OCP-019 (OCP019F.CAL). Add 40 degrees to measured angle to
   get the nadir viewing angle. The usual nadir- and zenith-viewing angle is 40 degrees.
   The base of the SeaSAS pedastal is approximately 9.0-9.5 m above the water.
   * indicates SeaSAS and SUnSAS underway experiments.
   # indicates SeaSAS azimuth pointing experiments.
   $ indicates SeaSAS nadir- and zenith-viewing angle experiments.
   @ indicates SeaSAS and SUnSAS nadir- and zenith-viewing angle experiments.
   ! indicates sampling in a coccolithophore bloom.

1. Cast 1 was done simultaneously with LoCNESS cast 4 and SeaFALLS cast 13 (Es from OCM-035 only; no Ei).
2. Cast 2 was done simultaneously with LoCNESS cast 5 and SeaFALLS cast 14 (Es from OCM-035 only; no Ei).
3. Cast 3 was done simultaneously with LoCNESS cast 6 and SeaFALLS cast 15 (Es from OCM-035 only; no Ei).
4. Cast 4 was done simultaneously with SUnSAS (water) cast 1 and SeaFALLS cast 16 (Es is from OCM-030; no Ei, Li, or Lt).
5. Cast 5 was done simultaneously with SUnSAS (gray) cast 2 (Es is from OCM-030; no Ei, Li, or Lt).
6. Cast 6 was done simultaneously with SUnSAS (water) cast 3 and SeaFALLS cast 17 (Es is from OCM-030; no Ei, Li, or Lt).
7. Cast 7 was done simultaneously with SUnSAS (gray) cast 4 (Es is from OCM-030; no Ei, Li, or Lt).
8. Cast 8 was done simultaneously with SUnSAS (water) cast 5 and SeaFALLS cast 18 (Es is from OCM-030; no Ei, Li, or Lt).
9. Cast 9 was done simultaneously with SUnSAS (gray) cast 6 (Es is from OCM-030; no Ei, Li, or Lt).
10. Cast 10 was done simultaneously with LoCNESS cast 7 and SeaFALLS cast 21 (Es is from OCM-030; no Ei).
11. Cast 11 was done as the in-water sensors were being pulled to the surface (Es is from OCM-030; no Ei).
12. Cast 12 was done simultaneously with LoCNESS cast 8 and SeaFALLS cast 22 (Es is from OCM-030; no Ei).
13. Cast 13 was done as the in-water sensors were being pulled to the surface (Es is from OCM-030; no Ei).
14. Cast 14 was done simultaneously with LoCNESS cast 9 and SeaFALLS cast 23 (Es is from OCM-030; no Ei).
15. Cast 15 was done as the in-water sensors were being pulled to the surface (Es is from OCM-030; no Ei).
16. Cast 16 was done simultaneously with SUnSAS (water) cast 7 and SeaFALLS cast 24.
17. Cast 17 was done simultaneously with SUnSAS (gray) cast 8 and SeaFALLS cast 25.
18. Cast 18 was done simultaneously with SUnSAS (water) cast 9.
19. Cast 19 was done simultaneously with SUnSAS (gray) cast 10 and SeaFALLS cast 26.
20. Cast 20 was done simultaneously with SUnSAS (water) cast 11.
21. Cast 21 was done simultaneously with SUnSAS (water) cast 12 and SeaFALLS cast 27.

22. Cast 22 was done simultaneously with SUnSAS (gray) cast 13.
23. Cast 23 was done simultaneously with LoCNESS cast 10 and SeaFALLS cast 28 (Es from OCM-035 only; no Ei).
24. Cast 24 was done as the in-water sensors were being pulled to the surface (Es from OCM-035 only; no Ei).
25. Cast 25 was done simultaneously with LoCNESS cast 11 (Es from OCM-035 only; no Ei).
26. Cast 26 was done simultaneously with LoCNESS cast 12 and SeaFALLS cast 29 (Es from OCM-035 only; no Ei).
27. Cast 27 was done simultaneously with SUnSAS (water) cast 14 and SeaFALLS cast 30.
28. Cast 28 was done simultaneously with SUnSAS (gray) cast 15.
29. Cast 29 was done simultaneously with SUnSAS (water) cast 16 and SeaFALLS cast 31.
30. Cast 30 was done simultaneously with SUnSAS (gray) cast 17.
31. Cast 31 was done simultaneously with SUnSAS (water) cast 18 and SeaFALLS cast 32.
32. Cast 32 was done simultaneously with SUnSAS (gray) cast 19.
33. Cast 33 was done simultaneously with SeaFALLS cast 33 (Es from OCM-035 only; no Ei).
34. Cast 34 was done simultaneously with SeaFALLS cast 34 (Es from OCM-035 only; no Ei).
35. Cast 35 was done as the in-water sensor was being pulled to the surface (Es from OCM-035 only; no Ei).
36. Cast 36 was done as the in-water sensor was being pulled to the surface (Es from OCM-035 only; no Ei).
37. Cast 37 was done simultaneously with SeaFALLS cast 35 (Es from OCM-035 only; no Ei).
38. Cast 38 was done simultaneously with LoCNESS cast 13 and SeaFALLS cast 36.
39. Cast 39 was done as the in-water sensors were being pulled to the surface.
40. Cast 40 was done simultaneously with LoCNESS cast 14 and SeaFALLS cast 37.
41. Cast 41 was done as the in-water sensors were being pulled to the surface.
42. Cast 42 was done simultaneously with LoCNESS cast 15 and SeaFALLS cast 38.
43. Cast 43 was done simultaneously with LoCNESS cast 16 and SeaFALLS cast 39.
44. Cast 44 was done as the in-water sensors were being pulled to the surface.
45. Cast 45 was done simultaneously with LoCNESS cast 17 and SeaFALLS cast 40.
46. Cast 46 was done as the in-water sensors were being pulled to the surface.
47. Cast 47 was done simultaneously with SUnSAS (water) cast 20 and SeaFALLS with DalBOSS cast 41.
48. Cast 48 was done simultaneously with SUnSAS (gray) cast 21.
49. Cast 49 was done simultaneously with SUnSAS (water) cast 22 and SeaFALLS with DalBOSS cast 42.
50. Cast 50 was done simultaneously with SUnSAS (gray) cast 23.
51. Cast 51 was done simultaneously with SUnSAS (water) cast 24 and SeaFALLS with DalBOSS cast 43.
52. Cast 52 was done simultaneously with SUnSAS (gray) cast 25.
53. Cast 53 was done simultaneously with SUnSAS (water) cast 26 and SeaFALLS with DalBOSS cast 44.
54. Cast 54 was done simultaneously with SUnSAS (gray) cast 27.
55. Cast 55 was done simultaneously with SUnSAS (water) cast 28 and SeaFALLS with DalBOSS cast 45.
56. Cast 56 was done simultaneously with SUnSAS (gray) cast 29.
57. Cast 57 was done simultaneously with SUnSAS (water) cast 30 and SeaFALLS with DalBOSS cast 46.
58. Cast 58 was done simultaneously with SUnSAS (gray) cast 31.
59. Cast 59 was done simultaneously with LoCNESS cast 18 and SeaFALLS cast 47.
60. Cast 60 was done as the in-water sensors were being pulled to the surface.
61. Cast 61 was done simultaneously with LoCNESS cast 19 and SeaFALLS cast 48.
62. Cast 62 was done as the in-water sensors were being pulled to the surface.
63. Cast 63 was done simultaneously with LoCNESS cast 20 and SeaFALLS cast 49.
64. Cast 64 was done simultaneously with SUnSAS (water) cast 32 and SeaFALLS with DalBOSS cast 50.
65. Cast 65 was done simultaneously with SUnSAS (gray) cast 33.
66. Cast 66 was done simultaneously with SUnSAS (water) cast 34 and SeaFALLS with DalBOSS cast 51.
67. Cast 67 was done simultaneously with SUnSAS (gray) cast 35.
68. Cast 68 was done simultaneously with SUnSAS (water) cast 36 and SeaFALLS with DalBOSS cast 52.
69. Cast 69 was done simultaneously with SUnSAS (gray) cast 37.
70. Cast 70 was done simultaneously with LoCNESS cast 21 and SeaFALLS cast 53.
71. Cast 71 was done as the in-water sensors were being pulled to the surface.
72. Cast 72 was done simultaneously with LoCNESS cast 22 and SeaFALLS cast 54.
73. Cast 73 was done as the in-water sensors were being pulled to the surface.
74. Cast 74 was done simultaneously with LoCNESS cast 23 and SeaFALLS cast 55.
75. Cast 75 was done as the in-water sensors were being pulled to the surface.
76. Cast 76 was done simultaneously with SUnSAS (water) cast 38 (ship steaming at 5 knots).
77. Cast 77 was done simultaneously with SUnSAS (gray) cast 39 (ship steaming at 5 knots).
78. Cast 78 was done simultaneously with SUnSAS (water) cast 40 (ship steaming at 5 knots).
79. Cast 79 was done simultaneously with SUnSAS (gray) cast 41 (ship steaming at 5 knots).
80. Cast 80 was done simultaneously with SUnSAS (water) cast 42 (ship steaming at 5 knots).
81. Cast 81 was done simultaneously with SUnSAS (gray) cast 43 (ship steaming at 5 knots).
The DIR-10 compass was recalibrated after cast 81.
82. Cast 82 was done simultaneously with SUnSAS (water) cast 44 and LoCNESS cast 25.
83. Cast 83 was done simultaneously with SUnSAS (water) cast 45.
84. Cast 84 was done simultaneously with SUnSAS (water) cast 46 and LoCNESS cast 25.
85. Cast 85 was done simultaneously with SUnSAS (water) cast 47.
86. Cast 86 was done simultaneously with SUnSAS (water) cast 48 and LoCNESS cast 25.
87. Cast 87 was done simultaneously with LoCNESS cast 28.
88. Cast 88 was done simultaneously with LoCNESS cast 29.
89. Cast 89 was done simultaneously with LoCNESS cast 30.
90. Cast 90 was done simultaneously with LoCNESS cast 31 and SeaFALLS cast 57.
91. Cast 91 was done simultaneously with LoCNESS cast 32 and SeaFALLS cast 58.
92. Cast 92 was done simultaneously with LoCNESS cast 33 and SeaFALLS cast 59.
93. Cast 93 was done simultaneously with SUnSAS (water) cast 49 (short cast approximately 2 minutes long).
94. Cast 94 was done simultaneously with SUnSAS (water) cast 50 and SeaFALLS with DalBOSS cast 60.
95. Cast 95 was done simultaneously with SUnSAS (gray) cast 51.

96. Cast 96 was done simultaneously with SUnSAS (water) cast 52 and SeaFALLS with DalBOSS cast 61.
97. Cast 97 was done simultaneously with SUnSAS (gray) cast 53.
98. Cast 98 was done simultaneously with LoCNESS cast 34 and SeaFALLS cast 62.
99. Cast 99 was done as the in-water sensors were being pulled to the surface.
100. Cast 100 was done simultaneously with SUnSAS (water) cast 54 and SeaFALLS with DalBOSS cast 63.
101. Cast 101 was done simultaneously with SUnSAS (gray) cast 55.
102. Cast 102 was done simultaneously with SUnSAS (water) cast 56 and SeaFALLS with DalBOSS cast 64.
103. Cast 103 was done simultaneously with SUnSAS (gray) cast 57.
104. Cast 104 was done simultaneously with SUnSAS (water) cast 58 and SeaFALLS with DalBOSS cast 65.
105. Cast 105 was done simultaneously with SUnSAS (gray) cast 59.
106. Cast 106 was done simultaneously with SUnSAS (water) cast 60 and SeaFALLS with DalBOSS cast 66.
107. Cast 107 was done at 90 deg. wrt sun simultaneously with SUnSAS (water) cast 61 and SeaFALLS with DalBOSS cast 67.
108. Cast 108 was done at 80 deg. wrt sun simultaneously with SUnSAS (water) cast 62.
109. Cast 109 was done at 70 deg. wrt sun simultaneously with SUnSAS (water) cast 63 and SeaFALLS cast 68.
110. Cast 110 was done at 60 deg. wrt sun simultaneously with SUnSAS (water) cast 64.
111. Cast 111 was done at 50 deg. wrt sun simultaneously with SUnSAS (water) cast 65.
112. Cast 112 was done at 40 deg. wrt sun simultaneously with SUnSAS (water) cast 66.
113. Cast 113 was done at 30 deg. wrt sun simultaneously with SUnSAS (water) cast 67.
114. Cast 114 was done at 90 deg. wrt sun and simultaneously with SUnSAS (water) cast 68 and LoCNESS cast 35.
115. Cast 115 was done at 100 deg. wrt sun and simultaneously with SUnSAS (water) cast 69.
116. Cast 116 was done at 110 deg. wrt sun and simultaneously with SUnSAS (water) cast 70 (some wake effects in SeaSAS FOV).
117. Cast 117 was done at 120 deg. wrt sun and simultaneously with SUnSAS (water) cast 71 and LoCNESS cast 36.
118. Cast 118 was done at 130 deg. wrt sun and simultaneously with SUnSAS (water) cast 72.
119. Cast 119 was done at 140 deg. wrt sun and simultaneously with SUnSAS (water) cast 73 and LoCNESS cast 37.
120. Cast 120 was done at 150 deg. wrt sun and simultaneously with SUnSAS (water) cast 74.
121. Cast 121 was done at 160 deg. wrt sun and simultaneously with SUnSAS (water) cast 75 and LoCNESS cast 36.
122. Cast 122 was done at 170 deg. wrt sun and simultaneously with SUnSAS (water) cast 76.
123. Cast 123 was done at 180 deg. wrt sun and simultaneously with SUnSAS (water) cast 77.
124. Cast 124 was done simultaneously with SUnSAS (water) cast 78 (ship steaming at 5 knots).
125. Cast 125 was done simultaneously with SUnSAS (water) cast 79 (ship steaming at 5 knots).
126. Cast 126 was done simultaneously with SUnSAS (water) cast 80 (ship steaming at 5 knots).
127. Cast 127 was done simultaneously with SUnSAS (water) cast 81 and SeaFALLS cast 69.
128. Cast 128 was done simultaneously with SUnSAS (gray) cast 82 and SeaFALLS cast 70.
129. Cast 129 was done simultaneously with SUnSAS (water) cast 83.
130. Cast 130 was done simultaneously with SUnSAS (gray) cast 84 and SeaFALLS cast 71.
131. Cast 131 was done simultaneously with SUnSAS (water) cast 85.
132. Cast 132 was done simultaneously with SUnSAS (gray) cast 86 and SeaFALLS cast 72.
133. Cast 133 was done at 90 deg. wrt sun simultaneously with SUnSAS (water) cast 87 and SeaFALLS cast 73.
134. Cast 134 was done at 80 deg. wrt sun simultaneously with SUnSAS (water) cast 88.
135. Cast 135 was done at 70 deg. wrt sun simultaneously with SUnSAS (water) cast 89 and SeaFALLS cast 74.
136. Cast 136 was done at 60 deg. wrt sun simultaneously with SUnSAS (water) cast 90.
137. Cast 137 was done at 50 deg. wrt sun simultaneously with SUnSAS (water) cast 91 and SeaFALLS cast 75.
138. Cast 138 was done at 40 deg. wrt sun simultaneously with SUnSAS (water) cast 92.
139. Cast 139 was done at 30 deg. wrt sun simultaneously with SUnSAS (water) cast 93.
140. Cast 140 was done simultaneously with SUnSAS (water) cast 94 and LoCNESS cast 39.
141. Cast 141 was done simultaneously with SUnSAS (gray) cast 95.
142. Cast 142 was done simultaneously with SUnSAS (water) cast 96 and LoCNESS cast 40.
143. Cast 143 was done simultaneously with SUnSAS (gray) cast 97.
144. Cast 144 was done simultaneously with SUnSAS (water) cast 98 and LoCNESS cast 41.
145. Cast 145 was done simultaneously with SUnSAS (gray) cast 99.
146. Cast 146 was done at 0 deg. wrt nadir simultaneously with SUnSAS (water) cast 100 and LoCNESS cast 42.
147. Cast 147 was done at 10 deg. wrt nadir simultaneously with SUnSAS (water) cast 101.
148. Cast 148 was done at 20 deg. wrt nadir simultaneously with SUnSAS (water) cast 102 and LoCNESS cast 43.
149. Cast 149 was done at 30 deg. wrt nadir simultaneously with SUnSAS (water) cast 103.
150. Cast 150 was done at 40 deg. wrt nadir simultaneously with SUnSAS (water) cast 104 and LoCNESS cast 44.
151. Cast 151 was done at 45 deg. wrt nadir simultaneously with SUnSAS (water) cast 105.
152. Cast 152 was done at 50 deg. wrt nadir simultaneously with SUnSAS (water) cast 106.
153. Cast 153 was done simultaneously with SUnSAS (water) cast 107 and SeaFALLS with DalBOSS cast 76.
154. Cast 154 was done simultaneously with SUnSAS (gray) cast 108.
155. Cast 155 was done simultaneously with SUnSAS (water) cast 109 (ship steaming at 5 knots).
156. Cast 156 was done simultaneously with SUnSAS (water) cast 110 (ship steaming at 5 knots).
157. Cast 157 was done simultaneously with SUnSAS (water) cast 111 (ship steaming at 5 knots).
158. Cast 158 was done simultaneously with SUnSAS (water) cast 112 (ship steaming at 7 knots).
159. Cast 159 was done simultaneously with SUnSAS (water) cast 113 and SeaFALLS with DalBOSS cast 77.
160. Cast 160 was done simultaneously with SUnSAS (water) cast 114 and SeaFALLS with DalBOSS cast 78.
161. Cast 161 was done simultaneously with SUnSAS (water) cast 115 and SeaFALLS with DalBOSS cast 79.
162. Cast 162 was done simultaneously with SUnSAS (gray) cast 116.
163. Cast 163 was done simultaneously with SUnSAS (water) cast 117 and SeaFALLS with DalBOSS cast

80.
164. Cast 164 was done simultaneously with SUnSAS (gray) cast 118.
165. Cast 165 was done simultaneously with SUnSAS (water) cast 119 and LoCNESS cast 45.
166. Cast 166 was done simultaneously with SUnSAS (gray) cast 120.
167. Cast 167 was done simultaneously with SUnSAS (water) cast 121.
168. Cast 168 was done simultaneously with SUnSAS (gray) cast 122.
169. Cast 169 was done simultaneously with SUnSAS (water) cast 123 and LoCNESS cast 46.
170. Cast 170 was done simultaneously with SUnSAS (gray) cast 124.
171. Cast 171 was done simultaneously with SUnSAS (water) cast 125 and LoCNESS cast 47.
172. Cast 172 was done simultaneously with SUnSAS (gray) cast 126.
173. Cast 173 was done simultaneously with SUnSAS (water) cast 127.
174. Cast 174 was done simultaneously with SUnSAS (gray) cast 128.
175. Cast 175 was done at 90 deg. wrt sun simultaneously with SUnSAS (water) cast 129 and LoCNESS cast 48.
176. Cast 176 was done at 100 deg. wrt sun simultaneously with SUnSAS (water) cast 130.
177. Cast 177 was done at 110 deg. wrt sun simultaneously with SUnSAS (water) cast 131 and LoCNESS cast 49.
178. Cast 178 was done at 120 deg. wrt sun simultaneously with SUnSAS (water) cast 132.
179. Cast 179 was done at 130 deg. wrt sun simultaneously with SUnSAS (water) cast 133 and LoCNESS cast 50.
180. Cast 180 was done at 140 deg. wrt sun simultaneously with SUnSAS (water) cast 134.
181. Cast 181 was done at 150 deg. wrt sun simultaneously with SUnSAS (water) cast 135 and LoCNESS cast 51.
182. Cast 182 was done simultaneously with LoCNESS cast 52 and SeaFALLS cast 81.
183. Cast 183 was done simultaneously with LoCNESS cast 53 and SeaFALLS cast 82.
184. Cast 184 was done simultaneously with LoCNESS cast 54 and SeaFALLS cast 83.
185. Cast 185 was done simultaneously with SUnSAS (water) cast 136 (both SASs to stbd) and LoCNESS cast 55.
186. Cast 186 was done simultaneously with SUnSAS (water) cast 137 (both SASs to stbd).
187. Cast 187 was done simultaneously with SUnSAS (water) cast 138 (both SASs to stbd) and LoCNESS cast 56.
188. Cast 188 was done simultaneously with SUnSAS (water) cast 139 (both SASs to stbd).
189. Cast 189 was done simultaneously with SUnSAS (water) cast 140 (both SASs to stbd and ship steaming at 5 knots).
190. Cast 190 was done simultaneously with SUnSAS (water) cast 141 (both SASs to stbd and ship steaming at 5 knots).
191. Cast 191 was done simultaneously with SUnSAS (water) cast 142 (both SASs to stbd and ship steaming at 5 knots).
192. Cast 192 was done simultaneously with SUnSAS (water) cast 143 and LoCNESS cast 57.
193. Cast 193 was done simultaneously with SUnSAS (gray) cast 144.
194. Cast 194 was done simultaneously with SUnSAS (white) cast 145 and LoCNESS cast 58.
195. Cast 195 was done simultaneously with SUnSAS (water) cast 146.
196. Cast 196 was done simultaneously with SUnSAS (water) cast 147 and LoCNESS cast 59.
197. Cast 197 was done simultaneously with SUnSAS (water) cast 148.
198. Cast 198 was done simultaneously with SUnSAS (water) cast 149.
199. Cast 199 was done simultaneously with SUnSAS (water) cast 150 and LoCNESS cast 60.
200. Cast 200 was done simultaneously with SUnSAS (water) cast 151 (both SASs to stbd) and LoCNESS cast 61.
201. Cast 201 was done simultaneously with SUnSAS (gray) cast 152 (both SASs to stbd).
202. Cast 202 was done simultaneously with SUnSAS (water) cast 153 (both SASs to stbd) and LoCNESS cast 62.
203. Cast 203 was done simultaneously with SUnSAS (water) cast 154 (both SASs to stbd) and LoCNESS cast 63.
204. Cast 204 was done simultaneously with SUnSAS (gray) cast 155 (both SASs to stbd).
205. Cast 205 was done simultaneously with SUnSAS (water) cast 156 (both SASs to stbd) and LoCNESS cast 64.
206. Cast 206 was done simultaneously with SUnSAS (gray) cast 157 (both SASs to stbd).
207. Cast 207 was done simultaneously with SUnSAS (water) cast 158 and LoCNESS cast 65.
208. Cast 208 was done simultaneously with SUnSAS (water) cast 159 and SeaFALLS with DalBOSS cast 84.
209. Cast 209 was done simultaneously with SUnSAS (water) cast 160 and SeaFALLS with DalBOSS cast 85.
210. Cast 210 was done simultaneously with SUnSAS (gray) cast 161.
211. Cast 211 was done simultaneously with SUnSAS (water) cast 162 and SeaFALLS with DalBOSS cast 86.
212. Cast 212 was done simultaneously with SUnSAS (gray) cast 163.
213. Cast 213 was done simultaneously with SUnSAS (water) cast 164 and SeaFALLS with DalBOSS cast 87.
214. Cast 214 was done simultaneously with SUnSAS (water) cast 165 (both SASs to stbd) and LoCNESS cast 66.
215. Cast 215 was done simultaneously with SUnSAS (water) cast 166 (both SASs to stbd) and LoCNESS cast 67.
216. Cast 216 was done simultaneously with SUnSAS (water) cast 167 (both SASs to stbd) and LoCNESS cast 68.
217. Cast 217 was done simultaneously with SUnSAS (gray) cast 168 (both SASs to stbd).
218. Cast 218 was done simultaneously with SUnSAS (water) cast 169 (both SASs to stbd) and LoCNESS cast 69.
219. Cast 219 was done simultaneously with SUnSAS (gray) cast 170 (both SASs to stbd).
220. Cast 220 was done simultaneously with SUnSAS (water) cast 171 (both SASs to stbd and ship steaming at 7 knots).
221. Cast 221 was done simultaneously with SUnSAS (water) cast 172 (both SASs to stbd and ship steaming at 7 knots).
222. Cast 222 was done simultaneously with SUnSAS (water) cast 173 (both SASs to stbd and ship steaming at 7 knots).
223. Cast 223 was done simultaneously with SUnSAS (water) cast 174 (both SASs to stbd and ship

steaming at 5 knots).
224. Cast 224 was done simultaneously with SUnSAS (water) cast 175 (both SASs to stbd and ship steaming at 5 knots).
225. Cast 225 was done simultaneously with SUnSAS (water) cast 176 (both SASs to stbd and ship steaming at 5 knots).
226. Cast 226 was done simultaneously with SUnSAS (water) cast 177 (both SASs to stbd and ship steaming at 9 knots).
227. Cast 227 was done simultaneously with SUnSAS (water) cast 178 (both SASs to stbd and ship steaming at 9 knots).
228. Cast 228 was done simultaneously with SUnSAS (water) cast 179 (both SASs to stbd and ship steaming at 9 knots).
229. Cast 229 was done simultaneously with SUnSAS (water) cast 180 (both SASs to stbd and ship steaming at 11 knots).
230. Cast 230 was done simultaneously with SUnSAS (water) cast 181 (both SASs to stbd and ship steaming at 11 knots).
231. Cast 231 was done simultaneously with SUnSAS (water) cast 182 (both SASs to stbd and ship steaming at 11 knots).
232. Cast 232 was done simultaneously with SUnSAS (water) cast 186 and SeaFALLS with DalBOSS cast 88.
233. Cast 233 was done simultaneously with SUnSAS (gray) cast 187.
234. Cast 234 was done simultaneously with SUnSAS (water) cast 188 and SeaFALLS with DalBOSS cast 89.
235. Cast 235 was done simultaneously with SUnSAS (gray) cast 189.
236. Cast 236 was done simultaneously with SUnSAS (water) cast 190 and SeaFALLS with DalBOSS cast 90.
237. Cast 237 was done simultaneously with SUnSAS (water) cast 191 and SeaFALLS with DalBOSS cast 91.
238. Cast 238 was done simultaneously with SUnSAS (water) cast 195 and LoCNESS cast 70.
239. Cast 239 was done simultaneously with SUnSAS (gray) cast 196.
240. Cast 240 was done simultaneously with SUnSAS (water) cast 197 and LoCNESS cast 71.
241. Cast 241 was done simultaneously with SUnSAS (gray) cast 198.
242. Cast 242 was done simultaneously with SUnSAS (water) cast 199 (both SASs at 30 deg. wrt nadir) and LoCNESS cast 72.
243. Cast 243 was done simultaneously with SUnSAS (water) cast 200 (both SASs at 30 deg. wrt nadir).
244. Cast 244 was done simultaneously with SUnSAS (water) cast 201 (both SASs at 30 deg. wrt nadir) and LoCNESS cast 73.
245. Cast 245 was done simultaneously with SUnSAS (water) cast 202 (both SASs at 45 deg. wrt nadir) and LoCNESS cast 74.
246. Cast 246 was done simultaneously with SUnSAS (water) cast 203 (both SASs at 45 deg. wrt nadir).
247. Cast 247 was done simultaneously with SUnSAS (water) cast 204 (both SASs at 45 deg. wrt nadir) and LoCNESS cast 75.
248. Cast 248 was done simultaneously with SUnSAS (water) cast 205.
249. Cast 249 was done simultaneously with SUnSAS (water) cast 209 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 92.
250. Cast 250 was done simultaneously with SUnSAS (gray) cast 210.
251. Cast 251 was done simultaneously with SUnSAS (white) cast 211.
252. Cast 252 was done simultaneously with SUnSAS (water) cast 212 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 93.
253. Cast 253 was done simultaneously with SUnSAS (gray) cast 213.
254. Cast 254 was done simultaneously with SUnSAS (white) cast 214 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 94.
255. Cast 255 was done simultaneously with SUnSAS (water) cast 215.
256. Cast 256 was done simultaneously with SUnSAS (white) cast 216 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 95.
257. Cast 257 was done simultaneously with SUnSAS (gray) cast 217.
258. Cast 258 was done simultaneously with SUnSAS (water) cast 218 (both SASs to stbd and ship steaming at 9 knots).
259. Cast 259 was done simultaneously with SUnSAS (water) cast 219 (both SASs to stbd and ship steaming at 9 knots).
260. Cast 260 was done simultaneously with SUnSAS (water) cast 220 (both SASs to stbd and ship steaming at 9 knots).
261. Cast 261 was done simultaneously with SUnSAS (water) cast 221 (both SASs to stbd and ship steaming at 7 knots).
262. Cast 262 was done simultaneously with SUnSAS (water) cast 222 (both SASs to stbd and ship steaming at 7 knots).
263. Cast 263 was done simultaneously with SUnSAS (water) cast 223 (both SASs to stbd and ship steaming at 7 knots).
264. Cast 264 was done simultaneously with SUnSAS (water) cast 224 (both SASs to stbd and ship steaming at 7 knots).
265. Cast 265 was done simultaneously with SUnSAS (water) cast 225 and LoCNESS cast 76.
266. Cast 266 was done simultaneously with SUnSAS (gray) cast 226.
267. Cast 267 was done simultaneously with SUnSAS (water) cast 227 and LoCNESS cast 77.
268. Cast 268 was done simultaneously with SUnSAS (gray) cast 228.
269. Cast 269 was done simultaneously with SUnSAS (water) cast 229 and LoCNESS cast 78.
270. Cast 270 was done simultaneously with SUnSAS (gray) cast 230.
271. Cast 271 was done simultaneously with SUnSAS (water) cast 231 (both SASs to stbd and ship steaming at 5 knots).
272. Cast 272 was done simultaneously with SUnSAS (water) cast 232 (both SASs to stbd and ship steaming at 5 knots).
273. Cast 273 was done simultaneously with SUnSAS (water) cast 233 (both SASs to stbd and ship steaming at 5 knots).
274. Cast 274 was done simultaneously with SUnSAS (water) cast 236 and SeaFALLS cast 96.
275. Cast 275 was done simultaneously with SUnSAS (gray) cast 237.
276. Cast 276 was done simultaneously with SUnSAS (water) cast 238 and SeaFALLS cast 97.
277. Cast 277 was done simultaneously with SUnSAS (gray) cast 239.

278. Cast 278 was done simultaneously with SUnSAS (water) cast 240 and SeaFALLS cast 98.
279. Cast 279 was done simultaneously with SUnSAS (gray) cast 241.
280. Cast 280 was done simultaneously with SUnSAS (water) cast 245 and LoCNESS cast 79.
281. Cast 281 was done simultaneously with SUnSAS (water) cast 246 and LoCNESS cast 80.
282. Cast 282 was done simultaneously with SUnSAS (water) cast 247 and LoCNESS cast 81.
283. Cast 283 was done simultaneously with SUnSAS (water) cast 248 and LoCNESS cast 82.
284. Cast 284 was done simultaneously with SUnSAS (water) cast 249.
285. Cast 285 was done simultaneously with SUnSAS (water) cast 250 (both SASs to stbd) and SeaFALLS cast 99.
286. Cast 286 was done simultaneously with SUnSAS (gray) cast 251 (both SASs to stbd).
287. Cast 287 was done simultaneously with SUnSAS (water) cast 252 (both SASs to stbd).
288. Cast 288 was done simultaneously with SUnSAS (water) cast 253 (both SASs to stbd).
289. Cast 289 was done simultaneously with SUnSAS (water) cast 254 (both SASs to stbd).
290. Cast 290 was done simultaneously with SUnSAS (water) cast 255 (both SASs to stbd) and LoCNESS cast 83.
291. Cast 291 was done simultaneously with SUnSAS (gray) cast 256 (both SASs to stbd).
292. Cast 292 was done simultaneously with SUnSAS (gray) cast 257 (both SASs to stbd) and LoCNESS cast 84.
293. Cast 293 was done simultaneously with SUnSAS (water) cast 258 (both SASs to stbd) and LoCNESS cast 85.
294. Cast 294 was done simultaneously with SUnSAS (gray) cast 259 (both SASs to stbd).
295. Cast 295 was done simultaneously with SUnSAS (water) cast 260 (both SASs to stbd) and LoCNESS cast 86.
296. Cast 296 was done simultaneously with SUnSAS (gray) cast 261 (both SASs to stbd).
297. Cast 297 was done simultaneously with SUnSAS (water) cast 265.
298. Cast 298 was done simultaneously with SUnSAS (water) cast 266 and SeaFALLS cast 100.
299. Cast 299 was done simultaneously with SUnSAS (white) cast 267.
300. Cast 300 was done simultaneously with SUnSAS (gray) cast 268 and SeaFALLS cast 101.
301. Cast 301 was done simultaneously with SUnSAS (water) cast 269 and SeaFALLS cast 102.
302. Cast 302 was done simultaneously with SUnSAS (water) cast 270 and SeaFALLS cast 103.
303. Cast 303 was done simultaneously with SUnSAS (gray) cast 271.
304. Cast 304 was done simultaneously with SUnSAS (water) cast 272 and SeaFALLS cast 104.
305. Cast 305 was done simultaneously with SUnSAS (gray) cast 273.
306. Cast 306 was done simultaneously with SUnSAS (water) cast 277 and SeaFALLS with DalBOSS cast 105.
307. Cast 307 was done simultaneously with SUnSAS (gray) cast 278.
308. Cast 308 was done simultaneously with SUnSAS (water) cast 279 and SeaFALLS with DalBOSS cast 106.
309. Cast 309 was done simultaneously with SUnSAS (gray) cast 280.
310. Cast 310 was done simultaneously with SUnSAS (water) cast 281 and SeaFALLS with DalBOSS cast 107.
311. Cast 311 was done simultaneously with SUnSAS (gray) cast 282.
312. Cast 312 was done simultaneously with SUnSAS (water) cast 283 and SeaFALLS with DalBOSS cast 108.
313. Cast 313 was done simultaneously with SUnSAS (water) cast 284 and SeaFALLS with DalBOSS cast 109.
314. Cast 314 was done simultaneously with SUnSAS (water) cast 285 (with a little prop wash at the start of the cast).
315. Cast 315 was done simultaneously with SUnSAS (water) cast 286 (with prop wash at the end of the cast).
316. Cast 316 was done simultaneously with SUnSAS (water) cast 287 and LoCNESS cast 87.
317. Cast 317 was done simultaneously with SUnSAS (gray) cast 288.
318. Cast 318 was done simultaneously with SUnSAS (water) cast 289 and LoCNESS cast 88.
319. Cast 319 was done simultaneously with SUnSAS (water) cast 290 and LoCNESS cast 89.
320. Cast 320 was done simultaneously with SUnSAS (water) cast 291 and LoCNESS cast 90.
321. Cast 321 was done simultaneously with SUnSAS (water) cast 295 and LoCNESS cast 91.
322. Cast 322 was done simultaneously with SUnSAS (gray) cast 296.
323. Cast 323 was done simultaneously with SUnSAS (water) cast 297 and LoCNESS cast 92.
324. Cast 324 was done simultaneously with SUnSAS (white) cast 298 and LoCNESS cast 93.
325. Cast 325 was done simultaneously with SUnSAS (gray) cast 299.
326. Cast 326 was done simultaneously with SUnSAS (water) cast 300 and LoCNESS cast 94.
327. Cast 327 was done simultaneously with SUnSAS (white) cast 301.
328. Cast 328 was done simultaneously with SUnSAS (gray) cast 302 and LoCNESS cast 95.
329. Cast 329 was done simultaneously with SUnSAS (water) cast 303.
330. Cast 330 was done simultaneously with SUnSAS (water) cast 304 and LoCNESS cast 96.
331. Cast 331 was done simultaneously with SUnSAS (water) cast 305 and SeaFALLS cast 110.
332. Cast 332 was done simultaneously with SUnSAS (water) cast 306 and SeaFALLS cast 111.
333. Cast 333 was done simultaneously with SUnSAS (water) cast 307 and SeaFALLS cast 112.
334. Cast 334 was done right after the afternoon station (prop wash 1.5 minutes into the cast).
335. Cast 335 was done simultaneously with LoCNESS cast 97.
336. Cast 336 was done simultaneously with LoCNESS cast 98.
337. Cast 337 was done simultaneously with SeaFALLS cast 113 and overlapping with LoCNESS cast 99.
338. Cast 338 was done simultaneously with SeaFALLS cast 114.
339. Cast 339 was done simultaneously with LoCNESS cast 100.
340. Cast 340 was done simultaneously with SUnSAS (water) cast 325 and LoCNESS cast 101.
341. Cast 341 was done simultaneously with SUnSAS (gray) cast 326 and LoCNESS cast 102.
342. Cast 342 was done simultaneously with SUnSAS (water) cast 327 and LoCNESS cast 103.
343. Cast 343 was done simultaneously with SUnSAS (gray) cast 328 and LoCNESS cast 104.
344. Cast 344 was done simultaneously with SUnSAS (water) cast 329.
345. Cast 345 was done simultaneously with SUnSAS (gray) cast 330.
346. Cast 346 was done simultaneously with SUnSAS (water) cast 331 and SeaFALLS cast 115.
347. Cast 347 was done simultaneously with SUnSAS (water) cast 332 and SeaFALLS cast 116 and overlapping with SeaFALLS cast 117.
348. Cast 348 was done simultaneously with SUnSAS (water) cast 333 and SeaFALLS with DalBOSS cast 118.

349. Cast 349 was done simultaneously with SUnSAS (water) cast 334 and SeaFALLS with DalBOSS cast 119.
350. Cast 350 was done simultaneously with SUnSAS (gray) cast 335.
351. Cast 351 was done simultaneously with SUnSAS (water) cast 336 and SeaFALLS cast 120.
352. Cast 352 was done simultaneously with SUnSAS (gray) cast 337 and SeaFALLS cast 121.
353. Cast 353 was done simultaneously with SeaFALLS cast 122 and LoCNESS cast 105.
354. Cast 354 was done simultaneously with SeaFALLS cast 123 and LoCNESS cast 106.
355. Cast 355 was done simultaneously with SeaFALLS cast 124 and LoCNESS cast 107.
356. Cast 356 was done simultaneously with SeaFALLS cast 125 and LoCNESS cast 108.
357. Cast 357 was done simultaneously with SeaFALLS cast 126 and LoCNESS cast 109.
358. Cast 358 was done simultaneously with SeaFALLS cast 127 and LoCNESS cast 110.
359. Cast 359 was done in isolation.
360. Cast 360 was done simultaneously with SeaFALLS cast 128 and LoCNESS cast 111.
361. Cast 361 was done simultaneously with SeaFALLS cast 129 and LoCNESS cast 112.
362. Cast 362 was done simultaneously with SeaFALLS cast 130 and LoCNESS cast 113.
363. Cast 363 was done simultaneously with SUnSAS (water) cast 338 and LoCNESS cast 114.
364. Cast 364 was done simultaneously with SUnSAS (water) cast 339 and LoCNESS cast 115.
365. Cast 365 was done simultaneously with SUnSAS (water) cast 340 and LoCNESS cast 116.
366. Cast 366 was done simultaneously with SUnSAS (water) cast 341 and LoCNESS cast 117.
367. Cast 367 was done simultaneously with SUnSAS (water) cast 342 and LoCNESS cast 118.
368. Cast 368 was done simultaneously with SUnSAS (water) cast 343.
369. Cast 369 was done simultaneously with SUnSAS (water) cast 344 and LoCNESS cast 119.
370. Cast 370 was done simultaneously with SUnSAS (water) cast 345 and LoCNESS cast 120.
371. Cast 371 was done simultaneously with SUnSAS (water) cast 346 and LoCNESS cast 121.
372. Cast 372 was done simultaneously with SUnSAS (water) cast 347 and LoCNESS cast 122.
373. Cast 373 was done simultaneously with SUnSAS (water) cast 348 and LoCNESS cast 123.
374. Cast 374 was done right after the afternoon station (prop wash 1.5 minutes into the cast).
375. Cast 375 was done simultaneously with SeaFALLS cast 131.
376. Cast 376 was done simultaneously with SeaFALLS cast 132.
377. Cast 377 was done simultaneously with SeaFALLS cast 133.
378. Cast 378 was done simultaneously with SUnSAS (water) cast 349 and SeaFALLS cast 134.
379. Cast 379 was done simultaneously with SUnSAS (water) cast 350 and SeaFALLS cast 135.
380. Cast 380 was done simultaneously with SUnSAS (water) cast 351 and SeaFALLS cast 136.
381. Cast 381 was done simultaneously with SUnSAS (water) cast 352 and SeaFALLS cast 137.
382. Cast 382 was done simultaneously with SUnSAS (water) cast 353 and SeaFALLS cast 138.
383. Cast 383 was done simultaneously with SUnSAS (water) cast 354 and SeaFALLS cast 139.
384. Cast 384 was done simultaneously with SUnSAS (water) cast 355 and SeaFALLS cast 140.
385. Cast 385 was done simultaneously with SUnSAS (water) cast 356 and SeaFALLS cast 141.

Stan Hooker

In- and Above-Water Optics

For AMT-8, the total number of optical systems deployed on the JCR was as follows:

a) The Low Cost NASA Environmental Sampling System (LoCNESS) configured with the Three-Headed Optical Recorder (THOR) option and a surface reference,

b) The SeaWiFS Free-Falling Advanced Light Level Sensors (SeaFALLS) with the SeaWiFS Buoyant Optical Surface Sensor (SeaBOSS) as a reference,

c) The SeaWiFS Surface Acquisition System (SeaSAS),

d) The SeaWiFS Underway Surface Acquisition System (SUnSAS),

e) The SeaWiFS Shadowband (SeaSHADE) radiometer system,

f) The Dalhousie University Buoyant Optical Surface Sensor (DalBOSS), and

g) An SQM and an SQM-II, which were set up in the Underway Instrumentation and Control (UIC) room.

The in-water profilers were LoCNESS and SeaFALLS, SeaSAS and SUnSAS made above-water measurements, and DalBOSS made both types of measurements. SeaSHADE provided reference measurements for the SeaSAS and SUnSAS platforms.

The SQM-II and all of the radiometers used with the optical measurement systems, were manufactured by Satlantic, Inc. This commonality in equipment was not accidental; the AMT optical team decided early in the AMT Program this was the easiest way to ensure redundancy and intercalibration. Another reason for relying on one manufacturer was it greatly simplified calibration monitoring with the SQM and SQM-II, since all the radiometers had identical outer dimensions, which meant neither SQM had to be repeatedly reconfigured.

LoCNESS, SeaSAS, SUnSAS, and SeaSHADE all use 7-channel ocean color radiance series 200 (OCR-200) sensors, as well as 7-channel ocean color irradiance series 200 (OCI-200) sensors. Both radiometers utilize 16-bit analog-to-digital (A/D) convertors and are capable of detecting light over a four-decade range. SeaFALLS, SeaBOSS, and DalBOSS are equipped with both 13-channel OCI and OCR series 1000 radiometers (OCI-1000 and OCR-1000, respectively), which employ 24-bit A/D convertors and gain switching and are usually capable of detecting light over a seven-decade range [the gain switching option was disabled for AMT-8, because recent analyses (Hooker and Maritorena 1999) have shown these systems are not performing at the level expected and the gain switching circuit is considered the most likely explanation for performance degradation].

A benefit of assembling (nearly) identical equipment from the participating investigators was the wavelengths and bandwidths (10 nm) for the different instruments were very similar. This made it much easier to make substitutions in the event of failures. For example, shortly after deploying on the ship, the SeaSHADE references malfunctioned, so the LoCNESS reference was routed to the SeaSAS and SUnSAS systems with only a partial loss in data collection (the diffuse irradiance data was lost).

The LoCNESS profiler measures spectral upwelled radiance and irradiance plus downwelled irradiance as a function of depth, $L_u(z,\lambda)$, $E_u(z,\lambda)$, and $E_d(z,\lambda)$, respectively. A separate sensor measures the total solar irradiance (the direct plus the indirect or diffuse components) just above the sea surface at the same wavelengths, $E_d(0^+,\lambda)$. Internal tilt sensors

quantify the vertical orientation (φ) of the profiler as it falls through the water column. The free-fall aspects of the LoCNESS design are derived from the SeaFALLS profiler which is based on a Satlantic SeaWiFS Profiling Multichannel Radiometer (SPMR).

In the SeaFALLS design, 13-channel OCR-1000 and OCI-1000 sensors are connected in line with power and telemetry modules (24-bit A/D convertors for the light sensors) to form a 1.24 m long cylinder. The OCR-1000 is oriented as the nose to measure $L_u(z,\lambda)$, and the OCI-1000 as the tail to measure $E_d(z,\lambda)$. The addition of weight to the nose and buoyant (foam) fins to a tail bracket produces a rocket-shaped package that falls through the water column with minimum tilts (originally less than 5 degrees, but the use of larger fins and additional weight improved the stability to less than 2 degrees). The power and telemetery cable extends through the field of view of the irradiance sensor, but the small diameter of the cable (7 mm) minimizes any negative effects on the measured light field. The addition of a conductivity and temperature (CT) probe plus a miniature fluorometer (with counterbalancing dummy on the opposite side of the profiler) provides a good description of basic water column properties.

The SeaSAS instruments measure the spectral indirect (or sky) radiance reaching the sea surface, $L_i(0^+,\lambda)$, and the (total) radiance right above the sea surface, $L_T(0^+,\lambda)$. The latter is composed of three terms: the radiance leaving the sea surface from below (the so-called water-leaving radiance), the direct sunlight reflecting off the surface (the so-called sun glint), and the indirect sky light reflecting off the surface (the so-called sky glint). SUnSAS makes the same measurements as SeaSAS, $L_i(0^+,\lambda)$ and $L_T(0^+,\lambda)$, but the surface-viewing radiometer looks through a square aperture that can be blocked with a calibrated gray or white plaque, so it can also measure the radiance of the plaque, $L_p(0^+,\lambda)$.

SeaSHADE is composed of two separate irradiance sensors. One is used to measure the total or global solar irradiance just above the sea surface, $E_d(0^+,\lambda)$, and the other is equipped with a motorized shadowband that periodically occults the irradiance sensors so the indirect (or diffuse) solar irradiance, $E_i(0^+,\lambda)$, can be measured. SeaSHADE provided all of the reference data for both SeaSAS and SUnSAS during AMT-8. The other major difference between the two systems is in the design of their frames: the SUnSAS frame is compact with several limitations in its sampling orientations, whereas the SeaSAS frame is large with very few restrictions in its viewing or pointing aspects.

The basic data sampling activity involved collecting data from all of the instruments as simultaneously as possible, so hand-held radios were used to coordinate the beginning and ending of sampling intervals. Although it would have been preferable to have all of the instruments sampling the smallest patch of water possible, space limitations and illumination constraints on the ship did not permit this; there was also a desire to collect underway data, so the SUnSAS system was mounted on the bow to prevent contamination of the data by the vessel's wake.

In addition to the above-water and in-water optical measurements, a variety of other data were collected to help chracterize the optical properties of the JCR transect:

1. Seawater temperature and salinity both vertically and along track;

2. Pigment analyses using the high performance liquid chromatography (HPLC) technique;

3. Seawater fluorescence and beam transmission both vertically and along track;

4. Meteorological observations including cloud cover, wind speed and direction; and

5. Wave height and swell direction.

In addition to paying close attention to the optimal viewing capabilities of each instrument system, some instruments were equipped with sensors that measured their viewing angles. SeaSAS, for example, had an external module that measured the vertical (two-axis) tilts and horizontal (compass) pointing of the radiometers (the so-called DIR-10 unit). A second DIR-10 was not available for SUnSAS (alhtough the frame was built to accommodate one), so the output of the SeaSAS DIR-10 was routed to the SUnSAS acquisition computer. LoCNESS, SeaFALLS, SeaBOSS, and DalBOSS were all equipped with internal sensors that measured the vertical (two-axis) tilts of the radiometers.

References

Hooker, S.B., and S. Maritorena, 1999: An Evaluation of Oceanographic Optical Instruments and Deployment Methodologies. J.\ Atmos. Oceanic Technol., (submitted).

Stan Hooker

AMT-8 (25 April to 7 June 1999) SUnSAS Log for the Sequential Day of the Year (SDY) with all times reported in GMT
(SDY 129 is 9 May and SDY 156 is 5 June).

Cast No.	SDY	Position Longitude	Latitude	Darks Ei/Es	Li/Lt	Sampling Beg.	End	Li Views	Lt/Lp Views	CCD Pic.	Stability Li	Lt	Es	Sky Conditions Around the Sun
1	129	-25.8173	-22.2287	1334	1329	1402	1405	Sky/Cloud	Water					Clear.
2	129	-25.8178	-22.2280			1407	1410	Sky/Cloud	Gray					Clear.
3	129	-25.8182	-22.2277			1410	1413	Sky/Cloud	Water					Clear.
4	129	-25.8191	-22.2272			1416	1419	Sky/Cloud	Gray					Clear.
5	129	-25.8201	-22.2267			1420	1423	Sky/Cloud	Water					Clear.
6	129	-25.8211	-22.2263			1423	1426	Sky/Cloud	Gray					Clear.
7	130	-23.2209	-19.2100	1124	1140	1145	1148	Sky/Cloud	Water					Clear.
8	130	-23.2211	-19.2096			1149	1152	Sky/Cloud	Gray					Clear.
9	130	-23.2212	-19.2093			1153	1156	Sky/Cloud	Water					Clear.
10	130	-23.2216	-19.2090			1202	1205	Sky/Cloud	Gray					Clear.
11	130	-23.2219	-19.2084			1208	1211	Bad Data	Water					Clear, ship moved during the cast.
12	130	-23.2232	-19.2062			1213	1216	Sky/Cloud	Water					Clear.
13	130	-23.2248	-19.2042			1218	1221	Sky	Gray	1219				Clear.
14	130	-23.0467	-18.9903			1449	1452	Sky/Cloud	Water					Clear.
15	130	-23.0476	-18.9902			1454	1457	Sky	Gray					Clear.
16	130	-23.0484	-18.9900			1459	1502	Sky	Water					Clear.
17	130	-23.0491	-18.9898			1503	1506	Sky	Gray					Clear.
18	130	-23.0508	-18.9891			1513	1516	Sky	Water					Clear.
19	130	-23.0514	-18.9889			1517	1520	Sky	Gray	1539				Clear.
20	131	-20.3960	-15.8576	1151	1442	1500	1503	Sky	Water	1436				Clear.
21	131	-20.3965	-15.8568			1504	1507	Sky	Gray					Clear.
22	131	-20.3995	-15.8540			1526	1529	Sky	Water					Clear.
23	131	-20.4001	-15.8536			1531	1534	Sky	Gray					Clear, cloud at end of the cast.
24	131	-20.4010	-15.8527			1538	1541	Sky	Water					Clear.
25	131	-20.4014	-15.8523			1542	1545	Sky/Cloud	Gray					Clear.
26	132	-18.1270	-13.1682	1000	1000	1055	1058	Sky/Cloud	Water					Clear.
27	132	-18.1273	-13.1679			1059	1102	Sky	Gray					Clear.
28	132	-18.1283	-13.1661			1105	1108	Sky	Water					Clear.
29	132	-18.1294	-13.1648			1109	1112	Sky	Gray	1110				Clear.
30	132	-18.1337	-13.1615			1124	1127	Sky/Cloud	Water					Clear.
31	132	-18.1355	-13.1604			1131	1134	Sky/Cloud	Gray					Clear.
32	133	-15.4025	-9.8587	0954	0954	1042	1045	Sky	Water					Clear, cloud at end of the cast.
33	133	-15.4032	-9.8588			1047	1050	Sky/Cloud	Gray					Clear at first, cloudy at end of the cast.
34	133	-15.4042	-9.8585			1053	1056	Sky/Cloud	Water					Clear, cloud edge at end of the cast.
35	133	-15.4049	-9.8582			1057	1100	Sky	Gray	1058				Clear, small cloud edge at end of the cast.
36	133	-15.4065	-9.8574			1104	1107	Sky	Water					Clear.
37	133	-15.4076	-9.8564			1108	1111	Sky	Gray					Clear, small cloud in the middle of the cast.
38*	133	-15.2313	-9.5920		1342	1345	1348	Sky/Cloud	Water					Clear.
39*	133	-15.2339	-9.5871			1349	1352	Sky/Cloud	Gray					Clear.
40*	133	-15.2370	-9.5678			1402	1405	Sky	Water					Clear.
41*	133	-15.2394	-9.5643			1405	1408	Sky	Gray					Clear.
42*	133	-15.2427	-9.5594			1409	1412	Sky	Water					Clear.
43*	133	-15.2452	-9.5557			1412	1415	Sky	Gray					Clear.
44	139	-15.5310	-4.1195	1012	1012	1039	1042	Cloud	Water					Clear with high haze.
45	139	-15.5314	-4.1197			1043	1046	Cloud	Water					Clear with high haze and some small clouds.
46	139	-15.5310	-4.1208			1050	1053	Sky/Cloud	Water					Clear with high haze and cloud edges at start.
47	139	-15.5308	-4.1209			1054	1057	Sky/Cloud	Water					Clear with high haze.
48	139	-15.5309	-4.1210			1058	1101	Cloud	Water	1102				Clear with high haze.
49	140	-16.7068	-0.0724	0950	1104	1109	1111	Sky/Cloud	Water	1118				Thin high cumulus clouds; cloud at the end of cast.
50	140	-16.7995	0.2318			1311	1314	Sky	Water					Thin high cirrus clouds.
51	140	-16.7995	0.2328			1315	1318	Sky	Gray	1319				Thin high cirrus clouds.
52	140	-16.7998	0.2348			1322	1325	Sky	Water					Thin high cirrus clouds; cloud at the end of the cast.
53	140	-16.8000	0.2360			1326	1329	Sky/Cloud	Gray					Thin high cirrus clouds; cloud at the end of the cast.
54	141	-17.8834	3.8994	0946	0946	1037	1040	Sky/Cloud	Water					Thin high cirrus clouds.
55	141	-17.8834	3.8996			1041	1044	Sky	Gray					Thin high cirrus clouds.

56 141 -17.8833 3.9001 1047 1050 Sky/Cloud Water Thin high cirrus clouds.
57 141 -17.8833 3.9003 1051 1054 Sky/Haze Gray Thin high cirrus clouds.
58 141 -17.8835 3.9006 1055 1058 Sky Water Thin high cirrus clouds.
59 141 -17.8836 3.9012 1059 1102 Sky/Cloud Gray Thin high cirrus clouds.
60 141 -17.8839 3.9022 1108 1111 Sky/Cloud Water 1108 Cloudy with brightening in the middle of the cast.
61# 141 -17.8839 3.9026 1115 1118 Sky Water Thin high cirrus clouds.
62# 141 -17.8838 3.9027 1118 1121 Sky Water Thin high cirrus clouds.
63# 141 -17.8838 3.9028 1121 1124 Sky Water Thin high cirrus clouds.
64# 141 -17.8838 3.9030 1125 1128 Sky Water Thin high cirrus clouds.
65# 141 -17.8837 3.9032 1129 1132 Sky Water Thin high cirrus clouds.
66# 141 -17.8837 3.9034 1132 1135 Sky/Cloud Water Thin high cirrus clouds.
67# 141 -17.8837 3.9038 1136 1139 Sky/Cloud Water Thin high cirrus clouds.
68# 141 -18.0119 4.3128 1403 1406 Sky/Haze Water Thin high cirrus clouds.
69# 141 -18.0121 4.3126 1406 1409 Sky/Haze Water Thin high cirrus clouds.
70# 141 -18.0124 4.3126 1409 1412 Sky/Haze Water Thin high cirrus clouds.
71# 141 -18.0128 4.3125 1413 1416 Sky/Haze Water Thin high cirrus clouds.
72# 141 -18.0133 4.3123 1417 1420 Sky/Haze Water Thin high cirrus clouds.
73# 141 -18.0137 4.3121 1420 1423 Sky/Haze Water Thin high cirrus clouds.
74# 141 -18.0143 4.3119 1424 1427 Sky/Haze Water Thin high cirrus clouds.
75# 141 -18.0148 4.3116 1428 1431 Sky/Haze Water Thin high cirrus clouds.
76# 141 -18.0152 4.3114 1432 1435 Sky/Haze Water 1433 Thin high cirrus clouds.
77# 141 -18.0152 4.3110 1436 1439 Sky/Haze Water Thin high cirrus clouds.
78* 141 -18.0188 4.3112 1446 1449 Sky/Cloud Water Thin high cirrus clouds.
79* 141 -18.0242 4.3126 1450 1453 Sky/Cloud Water Thin high cirrus clouds.
80* 141 -18.0324 4.3148 1456 1459 Sky/Cloud Water Thin high cirrus clouds.
81 142 -18.9875 7.6207 0947 0947 1038 1041 Sky/Haze Water Clear with high haze.
82 142 -18.9871 7.6209 1042 1045 Sky/Cloud Gray Clear with high haze.
83 142 -18.9870 7.6210 1046 1049 Sky/Cloud Water Clear with high haze; cloud edge at end of the cast.
84 142 -18.9870 7.6210 1049 1052 Sky/Haze Gray Clear with high haze.
85 142 -18.9868 7.6210 1053 1056 Sky/Cloud Water 1054 Clear with high haze.
86 142 -18.9864 7.6211 1056 1059 Sky/Cloud Gray Clear with high haze.
87# 142 -18.9856 7.6216 1103 1106 Sky Water Clear with high haze.
88# 142 -18.9855 7.6219 1107 1110 Sky/Haze Water Clear with high haze.
89# 142 -18.9853 7.6220 1110 1113 Sky/Haze Water Clear with high haze.
90# 142 -18.9853 7.6220 1113 1116 Sky/Haze Water Clear with high haze.
91# 142 -18.9852 7.6222 1118 1121 Sky/Haze Water Clear with high haze.
92# 142 -18.9850 7.6222 1121 1124 Haze/Cloud Water Clear with high haze.
93# 142 -18.9848 7.6222 1124 1127 Sky Water Clear with high haze.
94 142 -19.0524 7.8400 1250 1253 Haze/Cloud Water Clear with high haze.
95 142 -19.0516 7.8409 1254 1257 Haze/Cloud Gray Clear with high haze.
96 142 -19.0510 7.8413 1257 1300 Haze/Cloud Water Clear with high haze.
97 142 -19.0500 7.8419 1301 1304 Haze/Cloud Gray Clear with high haze.
98 142 -19.0493 7.8421 1304 1307 Sky/Haze Water Clear with

high haze.
99 142 -19.0483 7.8426 1308 1311 Sky/Haze Gray 1308 Clear with high haze.
100$ 142 -19.0459 7.8440 1318 1321 Sky/Haze Water Clear with high haze.
101$ 142 -19.0448 7.8442 1322 1325 Sky/Haze Water Clear with high haze.
102$ 142 -19.0437 7.8445 1326 1329 Sky/Haze Water Clear with high haze.
103$ 142 -19.0425 7.8448 1330 1333 Sky/Haze Water Clear with high haze.
104$ 142 -19.0416 7.8450 1334 1337 Sky/Haze Water Clear with high haze.
105$ 142 -19.0413 7.8453 1338 1341 Sky/Haze Water Clear with high haze.
106$ 142 -19.0415 7.8454 1342 1345 Haze/Cloud Water Clear with high haze.
107 143 -20.1479 11.5645 0954 0954 1042 1045 Sky/Haze Water Clear with high haze.
108 143 -20.1476 11.5646 1045 1048 Haze/Cloud Gray Clear with high haze.
109* 143 -20.2542 11.8745 1302 1305 Sky/Cloud Water Clear with high haze; cloudy at the end of the cast.
110* 143 -20.2526 11.8839 1309 1312 Sky/Cloud Water Clear with high haze; cloud edges in middle of cast.
111* 143 -20.2515 11.8907 1314 1317 Sky/Cloud Water Clear with high haze; cloud edges in middle of cast.
112* 143 -20.2559 11.9078 1324 1327 Sky/Cloud Water Clear with high haze at start; cloudy to end of cast.
113 143 -20.2589 11.9183 1352 1355 Sky/Cloud Water Clear with high haze; cloud edges at end of cast.
114 143 -20.2593 11.9178 1405 1408 Haze/Cloud Water Cloud edges for the entire cast.
115 143 -20.2595 11.9177 1410 1413 Sky/Haze Water Clear with high haze.
116 143 -20.2597 11.9175 1413 1416 Haze/Cloud Gray 1415 Clear with high haze.
117 143 -20.2598 11.9171 1418 1421 Sky/Haze Water Clear with high haze.
118 143 -20.2601 11.9170 1422 1425 Haze/Cloud Gray Clear with high haze.
119 144 -20.9986 15.1502 1001 1001 1053 1056 Sky/Haze Water Clear with high haze.
120 144 -20.9984 15.1502 1056 1059 Sky/Haze Gray Clear with high haze.
121 144 -20.9986 15.1501 1101 1104 Sky/Haze Water Clear with high haze.
122 144 -20.9986 15.1501 1104 1107 Sky/Haze Gray Clear with high haze.
123 144 -20.9984 15.1502 1107 1110 Sky/Haze Water 1109 Clear with high haze.
124 144 -20.9980 15.1503 1111 1114 Sky/Haze Gray Clear with high haze.
125 144 -20.9979 15.1502 1115 1118 Sky/Haze Water Clear with high haze.
126 144 -20.9978 15.1501 1118 1121 Sky/Haze Gray Clear with high haze.
127 144 -20.9977 15.1501 1122 1125 Sky/Haze Water Clear with high haze.
128 144 -20.9977 15.1496 1126 1129 Sky/Haze Gray Clear with high haze.
129# 144 -20.9997 15.1502 1231 1234 Sky/Haze Water Clear with high haze.
130# 144 -20.9994 15.1507 1234 1237 Sky/Haze Water Clear with high haze.
131# 144 -20.9996 15.1513 1238 1241 Sky/Haze Water Clear with high haze.
132# 144 -20.9997 15.1515 1242 1245 Sky/Haze Water Clear with high haze.
133# 144 -20.9996 15.1514 1246 1249 Sky/Haze Water Clear with high haze.
134# 144 -20.9994 15.1510 1249 1252 Sky/Haze Water Clear with high haze.
135# 144 -20.9992 15.1510 1253 1256 Sky/Haze Water 1254 Clear with high haze.
136 144 -20.9999 15.1511 1337 1340 Sky/Haze Water Clear with high haze.
137 144 -21.0001 15.1510 1340 1343 Sky/Haze Water Clear with high haze.
138 144 -21.0003 15.1511 1343 1346 Sky/Haze Water Clear with high haze.
139 144 -21.0006 15.1510 1347 1350 Sky/Haze Water Clear with high haze.
140* 144 -21.0008 15.1546 1354 1357 Sky/Haze Water Clear with high haze.

141*	144	-21.0006	15.1601			1358	1401	Sky/Haze	Water		Clear with high haze.
142*	144	-21.0004	15.1642			1401	1404	Sky/Haze	Water		Clear with high haze.
143	145	-20.9996	18.8022	0945	0945	1035	1038	Sky/Cloud	Water		Cloudy.
144	145	-20.9992	18.8024			1039	1042	Cloud	Gray		Cloudy with brightening.
145	145	-20.9991	18.8026			1043	1046	Cloud	White		Cloudy.
146	145	-20.9989	18.8025			1047	1050	Sky/Cloud	Water	1051	Cloudy with brightening.
147	145	-20.9982	18.8039			1059	1102	Sky/Cloud	Water		Clear then cloudy.
148	145	-20.9979	18.8046			1103	1105	Sky/Cloud	Water		Clear, cloudy, clear, and then cloudy.
149	145	-20.9973	18.8057			1113	1116	Sky/Cloud	Water		Clear and cloudy.
150	145	-20.9970	18.8066			1117	1120	Sky/Cloud	Water		Clear then cloudy.
151	145	-20.9970	19.3093			1407	1410	Cloud	Water		Cloudy with a little brightening.
152	145	-20.9966	19.3099			1410	1413	Cloud	Gray		Cloudy with brightening.
153	145	-20.9955	19.3107			1422	1425	Cloud	Water	1427	Clear then cloudy.
154	145	-20.9943	19.3124			1428	1431	Cloud	Water		Clear with some brightening.
155	145	-20.9940	19.3129			1432	1435	Cloud	Gray		Cloudy with a little brightening.
156	145	-20.9938	19.3133			1436	1439	Cloud	Water		Cloudy with a little brightening.
157	145	-20.9935	19.3136			1440	1443	Sky/Cloud	Gray		Cloudy then brightening at the end of the cast.
158	145	-20.9918	19.3154			1449	1452	Sky	Water		Clear then cloudy towards the end of the cast.
159	146	-21.0071	22.9116	0954	0954	1044	1047	Sky/Cloud	Water		Clear with thin cirrus; cloud at the end of the cast.
160	146	-21.0075	22.9122			1058	1101	Sky/Cloud	Water		Clear with thin cirrus.
161	146	-21.0077	22.9122			1101	1104	Sky/Cloud	Gray	1103	Clear with thin cirrus.
162	146	-21.0079	22.9124			1106	1109	Sky/Cloud	Water		Clear with thin cirrus; cloud edge in the middle.
163	146	-21.0080	22.9127			1111	1114	Sky/Cloud	Gray		Clear with thin cirrus; cloud edge at the end.
164	146	-21.0081	22.9129			1114	1117	Sky/Cloud	Water		Clear with thin cirrus.
165	146	-21.0684	23.2770			1332	1335	Sky	Water		Clear.
166	146	-21.0711	23.2756			1338	1341	Sky	Water	1346	Clear.
167	146	-21.0735	23.2741			1349	1352	Sky/Cloud	Water		Clear.
168	146	-21.0748	23.2733			1353	1356	Sky/Cloud	Gray		Clear.
169	146	-21.0759	23.2726			1356	1359	Sky/Cloud	Water		Clear.
170	146	-21.0776	23.2717			1400	1403	Sky	Gray		Clear.
171*	146	-21.0860	23.2701			1409	1412	Sky	Water		Clear.
172*	146	-21.0924	23.2699			1412	1415	Sky	Water		Clear.
173*	146	-21.0987	23.2697			1415	1418	Sky	Water		Clear.
174*	146	-21.1116	23.2696			1422	1425	Sky	Water		Clear.
175*	146	-21.1176	23.2694			1426	1429	Sky	Water		Clear.
176*	146	-21.1221	23.2693			1429	1432	Sky	Water		Clear.
177*	146	-21.1423	23.2707			1438	1441	Sky	Water		Clear.
178*	146	-21.1504	23.2714			1441	1444	Sky	Water		Clear.
179*	146	-21.1585	23.2722			1444	1447	Sky	Water		Clear.
180*	146	-21.1760	23.2740			1450	1453	Sky	Water		Clear.
181*	146	-21.1858	23.2751			1453	1456	Sky	Water		Clear.
182*	146	-21.1990	23.2767			1457	1500	Sky/Cloud	Water		Clear, small cloud edges at the end of the cast.
183%	147	-21.8032	26.6580	1006	1006	1015	1018	Sky	Water		Clear.
184%	147	-21.8046	26.6671			1018	1021	Sky	Water		Clear.
185%	147	-21.8060	26.6761			1021	1024	Sky	Water		Clear.
186	147	-21.8057	26.6931			1045	1048	Sky	Water		Clear.
187	147	-21.8050	26.6935			1049	1052	Sky	Gray		Clear.
188	147	-21.8046	26.6939			1053	1056	Sky	Water		Clear, cloud edge at the end of the cast.
189	147	-21.8042	26.6939			1057	1100	Sky	Gray	1058	Clear.
190	147	-21.8032	26.6942			1103	1106	Sky/Cloud	Water		Clear.
191	147	-21.8021	26.6951			1112	1115	Sky	Water		Clear.
192%	147	-21.8588	27.0176			1312	1315	Sky	Water		Clear with thin cirrus.
193%	147	-21.8612	27.0296			1316	1319	Sky	Water		Clear with thin cirrus.
194%	147	-21.8630	27.0386			1319	1322	Sky	Water		Clear with thin cirrus.
195	147	-21.8720	27.0508			1338	1341	Sky/Cloud	Water		Clear with thin cirrus.
196	147	-21.8725	27.0507			1342	1345	Sky/Cloud	Gray		Clear with thin cirrus.

197 147 -21.8741 27.0505 1349 1352 Sky/Cloud Water Clear with thin cirrus.
198 147 -21.8749 27.0505 1352 1355 Sky/Cloud Gray 1354 Clear with thin cirrus.
199@ 147 -21.8758 27.0505 1404 1407 Sky/Cloud Water Clear with thin cirrus.
200@ 147 -21.8762 27.0505 1409 1412 Sky/Cloud Water Clear with thin cirrus.
201@ 147 -21.8772 27.0505 1414 1417 Sky/Cloud Water Clear with thin cirrus.
202@ 147 -21.8813 27.0504 1425 1428 Sky/Cloud Water Clear with thin cirrus.
203@ 147 -21.8824 27.0504 1428 1431 Sky/Cloud Water Clear with thin cirrus.
204@ 147 -21.8835 27.0504 1432 1435 Sky/Cloud Water Clear with thin cirrus.
205 147 -21.8860 27.0503 1442 1445 Sky/Cloud Water Clear with thin cirrus.
206% 148 -21.5705 30.4339 0955 0955 1002 1005 Cloud Water Overcast.
207% 148 -21.5705 30.4339 1002 1005 Cloud Water Overcast.
208% 148 -21.5705 30.4339 1002 1005 Cloud Water Overcast.
209 148 -21.5607 30.4764 1033 1036 Cloud Water Overcast with slow brightening.
210 148 -21.5608 30.4768 1037 1040 Cloud Gray Overcast with some brightening.
211 148 -21.5606 30.4769 1041 1044 Cloud White Overcast with a little brightening.
212 148 -21.5608 30.4776 1046 1049 Cloud Water Overcast with brightening.
213 148 -21.5605 30.4781 1050 1053 Cloud Gray 1051 Overcast.
214 148 -21.5601 30.4805 1101 1104 Cloud White Overcast.
215 148 -21.5602 30.4812 1104 1107 Cloud Water Overcast.
216 148 -21.5602 30.4820 1108 1111 Cloud White Overcast.
217 148 -21.5601 30.4826 1112 1115 Cloud Gray Overcast.
218* 148 -21.5586 30.4963 1124 1127 Cloud Water Overcast.
219* 148 -21.5579 30.5039 1127 1130 Cloud Water Overcast.
220* 148 -21.5570 30.5140 1131 1134 Cloud Water Overcast with brightening.
221* 148 -21.5005 30.9293 1350 1353 Cloud Water Overcast with darkening.
222* 148 -21.4995 30.9351 1353 1356 Cloud Water Overcast with darkening.
223* 148 -21.4984 30.9409 1356 1359 Cloud Water Overcast.
224* 148 -21.4971 30.9486 1400 1403 Cloud Water 1407 Overcast.
225 148 -21.4981 30.9547 1409 1412 Cloud Water Overcast.
226 148 -21.4992 30.9544 1414 1417 Cloud Gray Overcast with brightening.
227 148 -21.4998 30.9542 1418 1421 Cloud Water Overcast with brightening at the end of the cast.
228 148 -21.5003 30.9540 1421 1424 Cloud Gray Overcast with slow brightening.
229 148 -21.5008 30.9538 1425 1428 Cloud Water Overcast with slow brightening.
230 148 -21.5013 30.9535 1429 1432 Cloud Gray Overcast with darkening.
231* 148 -21.5086 30.9531 1439 1442 Cloud Water Overcast.
232* 148 -21.5135 30.9531 1442 1445 Cloud Water Overcast.
233* 148 -21.5199 30.9530 1446 1449 Cloud Water Overcast.
234% 148 -21.5273 30.9661 1455 1458 Cloud Water Overcast with some brightening.
235% 148 -21.5256 30.9781 1459 1502 Cloud Water Overcast with brightening at the end of the cast.
236 149 -20.7876 34.3650 1010 1010 1050 1053 Sky Water Clear.
237 149 -20.7877 34.3643 1054 1057 Sky Gray 1055 Clear.
238 149 -20.7873 34.3635 1100 1103 Sky Water Clear, cloud edge in the middle of the cast.
239 149 -20.7877 34.3634 1104 1107 Sky Gray Clear.
240 149 -20.7883 34.3630 1112 1115 Sky Water Clear, cloud in the middle of the cast.
241 149 -20.7886 34.3629 1115 1118 Sky/Cloud Gray Clear, cloud at the end of the cast.
242% 149 -20.6996 34.5362 1247 1250 Sky/Cloud Water Clear.
243% 149 -20.6971 34.5399 1250 1253 Sky/Cloud Water Clear, cloud edges in the middle and the end.
244% 149 -20.6940 34.5448 1254 1257 Sky Water Overcast with brightening and then clear.
245 149 -20.6917 34.5497 1305 1308 Sky/Cloud Water 1313 Clear, cloud edges in the middle of the cast.
246 149 -20.6922 34.5504 1314 1317 Sky Water Clear, cloud in the middle of the cast.
247 149 -20.6923 34.5503 1320 1323 Sky/Cloud Water Clear.
248 149 -20.6924 34.5503 1326 1329 Sky Water Clear.
249 149 -20.6924 34.5502 1330 1333 Sky Water Clear, cloud in the middle of the cast.
250 150 -20.0143 38.1779 1010 1010 1034 1037 Water Water Clear.

251	150	-20.0148	38.1773			1038	1041	Sky/Cloud	Gray	1039	Clear, small cloud in the middle of the cast.
252	150	-20.0163	38.1753			1053	1056	Sky/Cloud	Water		Clear.
253	150	-20.0165	38.1747			1056	1059	Cloud	Water		Clear.
254	150	-20.0177	38.1742			1103	1106	Cloud	Water		Overcast with light rain.
255	150	-20.0042	38.6417			1405	1408	Sky	Water		Overcast with slow brightening.
256	150	-20.0048	38.6418			1408	1411	Sky	Gray		Overcast with slow brightening.
257	150	-20.0061	38.6424			1413	1416	Sky	Gray	1419	Overcast with slow brightening.
258	150	-20.0071	38.6435			1425	1428	Sky	Water		Clear with thin cumulus.
259	150	-20.0072	38.6438			1429	1432	Sky	Gray		Clear with thin cumulus.
260	150	-20.0075	38.6442			1434	1437	Sky	Water		Clear with thin cumulus.
261	150	-20.0084	38.6452			1438	1441	Sky	Gray		Clear with thin cumulus.
262%	150	-20.0142	38.6506			1450	1453	Sky/Cloud	Water		Cloudy then clear.
263%	150	-20.0196	38.6544			1454	1457	Sky	Water		Clear.
264%	150	-20.0235	38.6572			1457	1500	Sky	Water		Clear, small clouds in the middle of the cast.
265	151	-20.0001	42.0019	1011	1011	1042	1045	Cloud	Water		Overcast.
266	151	-20.0000	42.0021			1045	1048	Cloud	Water		Overcast.
267	151	-20.0000	42.0026			1049	1052	Cloud	White	1051	Overcast with slow brightening.
268	151	-20.0000	42.0026			1049	1052	Cloud	Gray		Overcast with slow brightening.
269	151	-19.9962	42.0076			1121	1124	Sky/Cloud	Water		Clear then cloudy.
270	151	-20.0079	42.2642			1304	1307	Sky	Water		Clear, very small cloud at the end of the cast.
271	151	-20.0076	42.2643			1308	1311	Sky	Gray	1309	Clear.
272	151	-20.0064	42.2664			1315	1318	Sky	Water		Clear, small cloud in the middle of the cast.
273	151	-20.0058	42.2672			1318	1321	Sky	Gray		Clear.
274%	152	-19.9863	45.9088	0940	0940	0949	0952	Sky/Cloud	Water		Clear.
275%	152	-19.9826	45.9177			0952	0955	Sky/Cloud	Water		Clear.
276%	152	-19.9789	45.9266			0955	0958	Sky/Cloud	Water		Clear with very thin cirrus.
277	152	-19.9783	45.9438			1014	1017	Sky/Cloud	Water		Clear with thin cirrus.
278	152	-19.9784	45.9437			1018	1021	Sky/Cloud	Gray		Clear with thin cirrus.
279	152	-19.9788	45.9440			1024	1027	Sky	Water	1025	Clear with thin cirrus.
280	152	-19.9794	45.9442			1028	1031	Sky	Gray		Clear with thin cirrus.
281	152	-19.9798	45.9445			1031	1034	Sky/Cloud	Water		Clear with thin cirrus.
282	152	-19.9800	45.9450			1035	1038	Sky/Cloud	Gray		Clear with thin cirrus.
283	152	-19.9803	45.9453			1039	1042	Sky/Cloud	Water		Clear with thin cirrus.
284	152	-19.9812	45.9459			1045	1048	Sky/Cloud	Water		Clear with thin cirrus.
285	152	-19.9818	45.9463			1054	1057	Sky/Cloud	Water		Clear with thin cirrus (a litle prop wash early in cast).
286	152	-19.9814	45.9470			1058	1101	Sky/Cloud	Water		Clear with thin cirrus (prop wash at the end of the cast).
287	152	-20.0039	46.3760			1333	1336	Sky/Cloud	Water		Clear with thin cirrus.
288	152	-20.0036	46.3752			1336	1339	Sky/Cloud	Gray	1338	Clear with cirrus.
289	152	-20.0030	46.3740			1342	1345	Sky/Cloud	Water		Clear with cirrus.
290	152	-20.0025	46.3727			1348	1351	Sky/Cloud	Water		Cirrus and thin cumulus.
291	152	-20.0027	46.3709			1355	1358	Cloud	Water		Cloudy with brightening.
292%	153	-15.7106	47.4500	1000	1000	1013	1016	Cloud	Water		Overcast.
293%	153	-15.6973	47.4516			1016	1019	Cloud	Water		Overcast with brightening at the end of the cast.
294%	153	-15.6749	47.4544			1021	1024	Cloud	Water		Overcast.
295	153	-15.6636	47.4542			1038	1041	Cloud	Water		Overcast with slow brightening.
296	153	-15.6645	47.4546			1043	1046	Cloud	Gray	1045	Overcast with some brightening.
297	153	-15.6653	47.4552			1049	1052	Cloud	Water		Overcast.
298	153	-15.6660	47.4555			1053	1056	Cloud	White		Overcast.
299	153	-15.6665	47.4558			1056	1059	Cloud	Gray		Overcast.
300	153	-15.6671	47.4561			1100	1103	Cloud	Water		Overcast.

301	153	-15.6678	47.4563			1103	1106	Cloud	White		Overcast.
302	153	-15.6686	47.4566			1107	1110	Cloud	Gray		Overcast.
303	153	-15.6691	47.4569			1110	1113	Cloud	Water		Overcast with slow brightening.
304	153	-15.6697	47.4572			1114	1117	Cloud	Water		Overcast.
305	153	-14.7766	47.5429			1524	1527	Cloud	Water		Cloudy, bright, cloudy, bright, and then cloudy.
306	153	-14.7784	47.5429			1535	1535	Cloud	Water		Cloudy.
307	153	-14.7801	47.5427			1541	1544	Cloud	Water		Cloudy.
308&	154	-9.9580	48.0692	0909	0909	0914	0917	Sky	Gray1		Clear.
309&	154	-9.9430	48.0728			0919	0922	Sky	White1		Clear.
310&	154	-9.9255	48.0772			0923	0926	Sky	Gray1		Clear.
311&	154	-9.9079	48.0818			0927	0930	Sky	White1		Clear, small cloud edges in the middle of the cast.
312&	154	-9.8947	48.0855			0930	0933	Sky	Gray1		Clear.
313&	154	-9.8773	48.0903			0934	0937	Sky	White1		Clear.
314&	154	-9.8600	48.0949			0938	0941	Sky	Gray1		Clear.
315&	154	-9.8466	48.0983			0941	0944	Sky	White1		Clear.
316&	154	-9.8158	48.1063			0948	0951	Sky	Water		Clear.
317&	154	-9.8023	48.1098			0951	0954	Sky	Gray		Clear.
318&	154	-9.7844	48.1145			0955	0958	Sky	White		Clear.
319&	154	-9.7669	48.1191			0959	1002	Sky	Water		Clear.
320&	154	-9.7537	48.1226			1002	1005	Sky	Gray		Clear.
321&	154	-9.7360	48.1273			1006	1009	Sky	White		Clear.
322&	154	-9.7229	48.1308			1009	1012	Sky	Water		Clear.
323&	154	-9.7052	48.1356			1013	1016	Sky	Gray		Clear.
324&	154	-9.6925	48.1391			1016	1019	Sky	White		Clear.
325	154	-9.4098	48.2132			1249	1252	Sky	Water		Clear.
326	154	-9.4120	48.2132			1252	1255	Sky	Gray	1255	Clear.
327	154	-9.4147	48.2127			1258	1301	Sky/Cloud	Water		Clear.
328	154	-9.4156	48.2125			1301	1304	Sky	Gray		Clear.
329	154	-9.4165	48.2120			1305	1308	Sky	Water		Clear.
330	154	-9.4181	48.2118			1309	1312	Sky/Cloud	Gray		Clear.
331	154	-9.4233	48.2121			1325	1328	Sky/Cloud	Water		Clear, cloud at the end of the cast.
332	154	-9.4270	48.2122			1334	1337	Sky/Cloud	Water		Clear, cloud at the end of the cast.
333	154	-9.4284	48.2121			1337	1340	Sky	Water		Clear.
334	154	-9.4303	48.2123			1342	1345	Sky	Water		Clear.
335	154	-9.4310	48.2122			1345	1348	Sky	Gray		Clear, small cloud edge in the middle of the cast.
336	154	-9.4335	48.2115			1352	1355	Sky	Water		Clear.
337	154	-9.4347	48.2113			1356	1359	Sky/Cloud	Gray		Clear.
338!	155	-9.2503	48.9774	1021	1048	1052	1055	Cloud	Water		Cirrus, cloud edges at the end of the cast.
339!	155	-9.2506	48.9760			1059	1102	Cloud	Water	1105	Cirrus, cloud edges in the middle of the cast.
340!	155	-9.2509	48.9749			1105	1108	Cloud	Water		Cirrus, cloud at the end of the cast.
341!	155	-9.2531	48.9720			1116	1119	Cloud	Water		Cirrus.
342!	155	-9.2534	48.9709			1120	1123	Cloud	Water		Cirrus with a little brightening.
343!	155	-9.2539	48.9702			1123	1126	Cloud	Water		Cirrus with a little darkening.
344!	155	-9.1805	48.9836			1254	1257	Cloud	Water		Overcast.
345!	155	-9.1830	48.9833			1307	1309	Cloud	Water	1310	Overcast with brightening.
346!	155	-9.1848	48.9831			1311	1314	Cloud	Water		Overcast with darkening.
347!	155	-9.1860	48.9832			1315	1317	Cloud	Water		Overcast.
348!	155	-9.1890	48.9824			1321	1322	Cloud	Water		Overcast (a very small amount of rain).
349	156	-4.4464	49.7001	0913	0913	0935	0938	Sky/Cloud	Water		Overcast.
350	156	-4.4443	49.6993			0939	0942	Sky/Cloud	Water		Overcast.
351	156	-4.4428	49.6989			0942	0945	Sky/Cloud	Water	0945	Overcast.
352	156	-4.4344	49.6973			1004	1004	Sky/Cloud	Water		Clear, cloud in the middle of the cast.
353	156	-4.4326	49.6966			1008	1011	Sky/Cloud	Water		Clear, cloud at the end of the cast.
354	156	-4.4299	49.6955			1016	1019	Cloud	Water		Clear, cloud in the middle and end of the cast.
355	156	-4.4286	49.6950			1022	1022	Cloud	Water		Overcast with brightening.
356	156	-4.4259	49.6940			1030	1030	Cloud	Water		Overcast with darkening.

Notes:

---

0. The Es sensor is OCM-035 and the Ei sensor is OCM-095 on MVD-013 (MVD013L.CAL).
   The Li sensor is OCT-068 on OCP-009 (OCP009I.CAL) and the Lt sensor is OCT-028 on MVD-012 (MVD-012J.CAL).
   The directional data is being provided by SeaSAS: DIR-001 on OCP-019 (OCP019F.CAL). Add 40 degrees to measured angle to
   get the nadir viewing angle.

The base of the SUnSAS pedastal is approximately 9.5-9.7 m above the water.
* indicates SeaSAS and SUnSAS underway experiments.
% indicates SUnSAS underway experiments.
& indicates SUnSAS underway experiments with OCT-069 (Li sensor) in place of OCT-028 (Lp/Lt sensor) with split viewing.
# indicates SeaSAS nadir- and zenith-viewing angle experiments.
@ indicates SeaSAS and SUnSAS nadir- and zenith-viewing angle experiments.
$ indicates SeaSAS nadir pointing experiments.
& indicates SUnSAS underway experiments with OCT-069 (Li sensor) in place of OCT-028 (Lp/Lt sensor).
! indicates sampling in a coccolithophore bloom.
White1 indicates sea- then (white) plaque-viewing in the same file (about 1.5 mins each).
Gray1 indicates sea- then (gray) plaque-viewing in the same file (about 1.5 mins each).

1. Cast 1 was done simultaneously with SeaSAS cast 4 and SeaFALLS cast 16 (Es is from OCM-030; no Ei).
2. Cast 2 was done simultaneously with SeaSAS cast 5 (Es is from OCM-030; no Ei).
3. Cast 3 was done simultaneously with SeaSAS cast 6 and SeaFALLS cast 17 (Es is from OCM-030; no Ei).
4. Cast 4 was done simultaneously with SeaSAS cast 7 (Es is from OCM-030; no Ei).
5. Cast 5 was done simultaneously with SeaSAS cast 8 and SeaFALLS cast 18 (Es is from OCM-030; no Ei).
6. Cast 6 was done simultaneously with SeaSAS cast 9 (Es is from OCM-030; no Ei).
7. Cast 7 was done simultaneously with SeaSAS cast 16 and SeaFALLS cast 24.
8. Cast 8 was done simultaneously with SeaSAS cast 17 and SeaFALLS cast 25.
9. Cast 9 was done simultaneously with SeaSAS cast 18.
10. Cast 10 was done simultaneously with SeaSAS cast 19 and SeaFALLS cast 26.
11. Cast 11 was done simultaneously with SeaSAS cast 20.
12. Cast 12 was done simultaneously with SeaSAS cast 21 and SeaFALLS cast 27.
13. Cast 13 was done simultaneously with SeaSAS cast 22.
14. Cast 14 was done simultaneously with SeaSAS cast 27 and SeaFALLS cast 30.
15. Cast 15 was done simultaneously with SeaSAS cast 28.
16. Cast 16 was done simultaneously with SeaSAS cast 29 and SeaFALLS cast 31.
17. Cast 17 was done simultaneously with SeaSAS cast 30.
18. Cast 18 was done simultaneously with SeaSAS cast 31 and SeaFALLS cast 32.
19. Cast 19 was done simultaneously with SeaSAS cast 32.
20. Cast 20 was done simultaneously with SeaSAS cast 47 and SeaFALLS with DalBOSS cast 41.
21. Cast 21 was done simultaneously with SeaSAS cast 48.
22. Cast 22 was done simultaneously with SeaSAS cast 49 and SeaFALLS with DalBOSS cast 42.
23. Cast 23 was done simultaneously with SeaSAS cast 50.
24. Cast 24 was done simultaneously with SeaSAS cast 51 and SeaFALLS with DalBOSS cast 43.
25. Cast 25 was done simultaneously with SeaSAS cast 52.
26. Cast 26 was done simultaneously with SeaSAS cast 53 and SeaFALLS with DalBOSS cast 44.
27. Cast 27 was done simultaneously with SeaSAS cast 54.
28. Cast 28 was done simultaneously with SeaSAS cast 55 and SeaFALLS with DalBOSS cast 45.
29. Cast 29 was done simultaneously with SeaSAS cast 56.
30. Cast 30 was done simultaneously with SeaSAS cast 57 and SeaFALLS with DalBOSS cast 46.
31. Cast 31 was done simultaneously with SeaSAS cast 58.
32. Cast 32 was done simultaneously with SeaSAS cast 64 and SeaFALLS with DalBOSS cast 50.
33. Cast 33 was done simultaneously with SeaSAS cast 65.
34. Cast 34 was done simultaneously with SeaSAS cast 66 and SeaFALLS with DalBOSS cast 51.
35. Cast 35 was done simultaneously with SeaSAS cast 67.
36. Cast 36 was done simultaneously with SeaSAS cast 68 and SeaFALLS with DalBOSS cast 52.
37. Cast 37 was done simultaneously with SeaSAS cast 69.
38. Cast 38 was done simultaneously with SeaSAS cast 76 (ship steaming at 5 knots).
39. Cast 39 was done simultaneously with SeaSAS cast 77 (ship steaming at 5 knots).
40. Cast 40 was done simultaneously with SeaSAS cast 78 (ship steaming at 5 knots).
41. Cast 41 was done simultaneously with SeaSAS cast 79 (ship steaming at 5 knots).
42. Cast 42 was done simultaneously with SeaSAS cast 80 (ship steaming at 5 knots).
43. Cast 43 was done simultaneously with SeaSAS cast 81 (ship steaming at 5 knots).
44. Cast 44 was done simultaneously with SeaSAS cast 82 and LoCNESS cast 25.
45. Cast 45 was done simultaneously with SeaSAS cast 83.
46. Cast 46 was done simultaneously with SeaSAS cast 84 and LoCNESS cast 26.
47. Cast 47 was done simultaneously with SeaSAS cast 85.
48. Cast 48 was done simultaneously with SeaSAS cast 86 and LoCNESS cast 27.
49. Cast 49 was done simultaneously with SeaSAS cast 93 (short cast approximately 2 minutes long).
50. Cast 50 was done simultaneously with SeaSAS cast 94 and SeaFALLS with DalBOSS cast 60.
51. Cast 51 was done simultaneously with SeaSAS cast 95.
52. Cast 52 was done simultaneously with SeaSAS cast 96 and SeaFALLS with DalBOSS cast 61.
53. Cast 53 was done simultaneously with SeaSAS cast 97.
54. Cast 54 was done simultaneously with SeaSAS cast 100 and SeaFALLS with DalBOSS cast 63.
55. Cast 55 was done simultaneously with SeaSAS cast 101.
56. Cast 56 was done simultaneously with SeaSAS cast 102 and SeaFALLS with DalBOSS cast 64.
57. Cast 57 was done simultaneously with SeaSAS cast 103.
58. Cast 58 was done simultaneously with SeaSAS cast 104 and SeaFALLS with DalBOSS cast 65.
59. Cast 59 was done simultaneously with SeaSAS cast 105.
60. Cast 60 was done simultaneously with SeaSAS cast 106 and SeaFALLS with DalBOSS cast 66.
61. Cast 61 was done simultaneously with SeaSAS cast 107 (at 90 deg. wrt sun) and SeaFALLS with DalBOSS cast 67.
62. Cast 62 was done simultaneously with SeaSAS cast 108 (at 80 deg. wrt sun).
63. Cast 63 was done simultaneously with SeaSAS cast 109 (at 70 deg. wrt sun).
64. Cast 64 was done simultaneously with SeaSAS cast 110 (at 60 deg. wrt sun).
65. Cast 65 was done simultaneously with SeaSAS cast 111 (at 50 deg. wrt sun).

66. Cast 66 was done simultaneously with SeaSAS cast 112 (at 40 deg. wrt sun).
67. Cast 67 was done simultaneously with SeaSAS cast 113 (at 30 deg. wrt sun).
68. Cast 68 was done simultaneously with SeaSAS cast 114 (at 90 deg. wrt sun) and LoCNESS cast 35.
69. Cast 69 was done simultaneously with SeaSAS cast 115 (at 100 deg. wrt sun).
70. Cast 70 was done simultaneously with SeaSAS cast 116 (at 110 deg. wrt sun).
71. Cast 71 was done simultaneously with SeaSAS cast 117 (at 120 deg. wrt sun) and LoCNESS cast 36.
72. Cast 72 was done simultaneously with SeaSAS cast 118 (at 130 deg. wrt sun).
73. Cast 73 was done simultaneously with SeaSAS cast 119 (at 140 deg. wrt sun) and LoCNESS cast 37.
74. Cast 74 was done simultaneously with SeaSAS cast 120 (at 150 deg. wrt sun).
75. Cast 75 was done simultaneously with SeaSAS cast 121 (at 160 deg. wrt sun) and LoCNESS cast 38.
76. Cast 76 was done simultaneously with SeaSAS cast 122 (at 170 deg. wrt sun).
77. Cast 77 was done simultaneously with SeaSAS cast 123 (at 180 deg. wrt sun).
78. Cast 78 was done simultaneously with SeaSAS cast 124 (ship steaming at 5 knots).
79. Cast 79 was done simultaneously with SeaSAS cast 125 (ship steaming at 5 knots).
80. Cast 80 was done simultaneously with SeaSAS cast 126 (ship steaming at 5 knots).
81. Cast 81 was done simultaneously with SeaSAS cast 127 and SeaFALLS cast 69.
82. Cast 82 was done simultaneously with SeaSAS cast 128 and SeaFALLS cast 70.
83. Cast 83 was done simultaneously with SeaSAS cast 129.
84. Cast 84 was done simultaneously with SeaSAS cast 130 and SeaFALLS cast 71.
85. Cast 85 was done simultaneously with SeaSAS cast 131.
86. Cast 86 was done simultaneously with SeaSAS cast 132 and SeaFALLS cast 72.
87. Cast 87 was done simultaneously with SeaSAS cast 133 (at 90 deg. wrt sun) and SeaFALLS cast 73.
88. Cast 88 was done simultaneously with SeaSAS cast 134 (at 80 deg. wrt sun).
89. Cast 89 was done simultaneously with SeaSAS cast 135 (at 70 deg. wrt sun) and SeaFALLS cast 74.
90. Cast 90 was done simultaneously with SeaSAS cast 136 (at 60 deg. wrt sun).
91. Cast 91 was done simultaneously with SeaSAS cast 137 (at 50 deg. wrt sun) and SeaFALLS cast 75.
92. Cast 92 was done simultaneously with SeaSAS cast 138 (at 40 deg. wrt sun).
93. Cast 93 was done simultaneously with SeaSAS cast 139 (at 30 deg. wrt sun).
94. Cast 94 was done simultaneously with SeaSAS cast 140 and LoCNESS cast 39.
95. Cast 95 was done simultaneously with SeaSAS cast 141.
96. Cast 96 was done simultaneously with SeaSAS cast 142 and LoCNESS cast 40.
97. Cast 97 was done simultaneously with SeaSAS cast 143.
98. Cast 98 was done simultaneously with SeaSAS cast 144 and LoCNESS cast 41.
99. Cast 99 was done simultaneously with SeaSAS cast 145.
100. Cast 100 was done simultaneously with SeaSAS cast 146 (at 0 deg. wrt nadir) and LoCNESS cast 42.
101. Cast 101 was done simultaneously with SeaSAS cast 147 (at 10 deg. wrt nadir).
102. Cast 102 was done simultaneously with SeaSAS cast 148 (at 20 deg. wrt nadir) and LoCNESS cast 43.
103. Cast 103 was done simultaneously with SeaSAS cast 149 (at 30 deg. wrt nadir).
104. Cast 104 was done simultaneously with SeaSAS cast 150 (at 40 deg. wrt nadir) and LoCNESS cast 44.
105. Cast 105 was done simultaneously with SeaSAS cast 151 (at 45 deg. wrt nadir).
106. Cast 106 was done simultaneously with SeaSAS cast 152 (at 50 deg. wrt nadir).
107. Cast 107 was done simultaneously with SeaSAS cast 153 and SeaFALLS with DalBOSS cast 76.
108. Cast 108 was done simultaneously with SeaSAS cast 154.
109. Cast 109 was done simultaneously with SeaSAS cast 155 (ship steaming at 5 knots).
110. Cast 110 was done simultaneously with SeaSAS cast 156 (ship steaming at 5 knots).
111. Cast 111 was done simultaneously with SeaSAS cast 157 (ship steaming at 5 knots).
112. Cast 112 was done simultaneously with SeaSAS cast 158 (ship steaming at 7 knots).
113. Cast 113 was done simultaneously with SeaSAS cast 159 and SeaFALLS with DalBOSS cast 77.
114. Cast 114 was done simultaneously with SeaSAS cast 160 and SeaFALLS with DalBOSS cast 78.
115. Cast 115 was done simultaneously with SeaSAS cast 161 and SeaFALLS with DalBOSS cast 79.
116. Cast 116 was done simultaneously with SeaSAS cast 162.
117. Cast 117 was done simultaneously with SeaSAS cast 163 and SeaFALLS with DalBOSS cast 80.
118. Cast 118 was done simultaneously with SeaSAS cast 164.
119. Cast 119 was done simultaneously with SeaSAS cast 165 and LoCNESS cast 45.
120. Cast 120 was done simultaneously with SeaSAS cast 166.
121. Cast 121 was done simultaneously with SeaSAS cast 167.
122. Cast 122 was done simultaneously with SeaSAS cast 168.
123. Cast 123 was done simultaneously with SeaSAS cast 169 and LoCNESS cast 46.
124. Cast 124 was done simultaneously with SeaSAS cast 170.
125. Cast 125 was done simultaneously with SeaSAS cast 171 and LoCNESS cast 47.
126. Cast 126 was done simultaneously with SeaSAS cast 172.
127. Cast 127 was done simultaneously with SeaSAS cast 173.
128. Cast 128 was done simultaneously with SeaSAS cast 174.
129. Cast 129 was done simultaneously with SeaSAS cast 175 (at 90 deg. wrt sun) and LoCNESS cast 48.
130. Cast 130 was done simultaneously with SeaSAS cast 176 (at 100 deg. wrt sun).
131. Cast 131 was done simultaneously with SeaSAS cast 177 (at 110 deg. wrt sun) and LoCNESS cast 49.
132. Cast 132 was done simultaneously with SeaSAS cast 178 (at 120 deg. wrt sun).
133. Cast 133 was done simultaneously with SeaSAS cast 179 (at 130 deg. wrt sun) and LoCNESS cast 50.
134. Cast 134 was done simultaneously with SeaSAS cast 180 (at 140 deg. wrt sun).
135. Cast 135 was done simultaneously with SeaSAS cast 181 (at 150 deg. wrt sun) and LoCNESS cast 51.
136. Cast 136 was done simultaneously with SeaSAS cast 185 (both SASs to stbd) and LoCNESS cast 55.
137. Cast 137 was done simultaneously with SeaSAS cast 186 (both SASs to stbd).
138. Cast 138 was done simultaneously with SeaSAS cast 187 (both SASs to stbd) and LoCNESS cast 56.
139. Cast 139 was done simultaneously with SeaSAS cast 188 (both SASs to stbd).
140. Cast 140 was done simultaneously with SeaSAS cast 189 (both SASs to stbd and ship steaming at 5

knots).
141. Cast 141 was done simultaneously with SeaSAS cast 190 (both SASs to stbd and ship steaming at 5 knots).
142. Cast 142 was done simultaneously with SeaSAS cast 191 (both SASs to stbd and ship steaming at 5 knots).
143. Cast 143 was done simultaneously with SeaSAS cast 192 and LoCNESS cast 57.
144. Cast 144 was done simultaneously with SeaSAS cast 193.
145. Cast 145 was done simultaneously with SeaSAS cast 194 and LoCNESS cast 58.
146. Cast 146 was done simultaneously with SeaSAS cast 195.
147. Cast 147 was done simultaneously with SeaSAS cast 196 and LoCNESS cast 59.
148. Cast 148 was done simultaneously with SeaSAS cast 197.
149. Cast 149 was done simultaneously with SeaSAS cast 198.
150. Cast 150 was done simultaneously with SeaSAS cast 199 and LoCNESS cast 60.
151. Cast 151 was done simultaneously with SeaSAS cast 200 (both SASs to stbd) and LoCNESS cast 61.
152. Cast 152 was done simultaneously with SeaSAS cast 201 (both SASs to stbd).
153. Cast 153 was done simultaneously with SeaSAS cast 202 (both SASs to stbd) and LoCNESS cast 62.
154. Cast 154 was done simultaneously with SeaSAS cast 203 (both SASs to stbd) and LoCNESS cast 63.
155. Cast 155 was done simultaneously with SeaSAS cast 204 (both SASs to stbd).
156. Cast 156 was done simultaneously with SeaSAS cast 205 (both SASs to stbd) and LoCNESS cast 64.
157. Cast 157 was done simultaneously with SeaSAS cast 206 (both SASs to stbd).
158. Cast 158 was done simultaneously with SeaSAS cast 207 and LoCNESS cast 65.
159. Cast 159 was done simultaneously with SeaSAS cast 208 and SeaFALLS with DalBOSS cast 84.
160. Cast 160 was done simultaneously with SeaSAS cast 209 and SeaFALLS with DalBOSS cast 85.
161. Cast 161 was done simultaneously with SeaSAS cast 210.
162. Cast 162 was done simultaneously with SeaSAS cast 211 and SeaFALLS with DalBOSS cast 86.
163. Cast 163 was done simultaneously with SeaSAS cast 212.
164. Cast 164 was done simultaneously with SeaSAS cast 213 and SeaFALLS with DalBOSS cast 87.
165. Cast 165 was done simultaneously with SeaSAS cast 214 and LoCNESS cast 66.
166. Cast 166 was done simultaneously with SeaSAS cast 215 and LoCNESS cast 67.
167. Cast 167 was done simultaneously with SeaSAS cast 216 and LoCNESS cast 68.
168. Cast 168 was done simultaneously with SeaSAS cast 217.
169. Cast 169 was done simultaneously with SeaSAS cast 218 and LoCNESS cast 69.
170. Cast 170 was done simultaneously with SeaSAS cast 219.
171. Cast 171 was done simultaneously with SeaSAS cast 220 (both SASs to stbd and ship steaming at 7 knots).
172. Cast 172 was done simultaneously with SeaSAS cast 221 (both SASs to stbd and ship steaming at 7 knots).
173. Cast 173 was done simultaneously with SeaSAS cast 222 (both SASs to stbd and ship steaming at 7 knots).
174. Cast 174 was done simultaneously with SeaSAS cast 223 (both SASs to stbd and ship steaming at 5 knots).
175. Cast 175 was done simultaneously with SeaSAS cast 224 (both SASs to stbd and ship steaming at 5 knots).
176. Cast 176 was done simultaneously with SeaSAS cast 225 (both SASs to stbd and ship steaming at 5 knots).
177. Cast 177 was done simultaneously with SeaSAS cast 226 (both SASs to stbd and ship steaming at 9 knots).
178. Cast 178 was done simultaneously with SeaSAS cast 227 (both SASs to stbd and ship steaming at 9 knots).
179. Cast 179 was done simultaneously with SeaSAS cast 228 (both SASs to stbd and ship steaming at 9 knots).
180. Cast 180 was done simultaneously with SeaSAS cast 229 (both SASs to stbd and ship steaming at 11 knots).
181. Cast 181 was done simultaneously with SeaSAS cast 230 (both SASs to stbd and ship steaming at 11 knots).
182. Cast 182 was done simultaneously with SeaSAS cast 231 (both SASs to stbd and ship steaming at 11 knots).
183. Cast 183 was done right before the morning station (ship steaming at 11 knots).
184. Cast 184 was done right before the morning station (ship steaming at 11 knots).
185. Cast 185 was done right before the morning station (ship steaming at 11 knots).
186. Cast 186 was done simultaneously with SeaSAS cast 232 and SeaFALLS with DalBOSS cast 88.
187. Cast 187 was done simultaneously with SeaSAS cast 233.
188. Cast 188 was done simultaneously with SeaSAS cast 234 and SeaFALLS with DalBOSS cast 89.
189. Cast 189 was done simultaneously with SeaSAS cast 235.
190. Cast 188 was done simultaneously with SeaSAS cast 236 and SeaFALLS with DalBOSS cast 90.
191. Cast 188 was done simultaneously with SeaSAS cast 237 and SeaFALLS with DalBOSS cast 91.
192. Cast 192 was done right before the afternoon station (ship steaming at 11 knots).
193. Cast 193 was done right before the afternoon station (ship steaming at 11 knots).
194. Cast 194 was done right before the afternoon station (ship steaming at 11 knots).
195. Cast 195 was done simultaneously with SeaSAS cast 238 and LoCNESS cast 70.
196. Cast 196 was done simultaneously with SeaSAS cast 239.
197. Cast 197 was done simultaneously with SeaSAS cast 240 and LoCNESS cast 71.
198. Cast 198 was done simultaneously with SeaSAS cast 241.
199. Cast 199 was done simultaneously with SeaSAS cast 242 (both SASs at 30 deg. wrt nadir) and LoCNESS cast 72.
200. Cast 200 was done simultaneously with SeaSAS cast 243 (both SASs at 30 deg. wrt nadir).
201. Cast 201 was done simultaneously with SeaSAS cast 244 (both SASs at 30 deg. wrt nadir) and LoCNESS cast 73.
202. Cast 202 was done simultaneously with SeaSAS cast 245 (both SASs at 45 deg. wrt nadir) and LoCNESS cast 74.
203. Cast 203 was done simultaneously with SeaSAS cast 246 (both SASs at 45 deg. wrt nadir).
204. Cast 204 was done simultaneously with SeaSAS cast 247 (both SASs at 45 deg. wrt nadir) and LoCNESS cast 75.
205. Cast 205 was done simultaneously with SeaSAS cast 248.
206. Cast 206 was done (with no Ei and Es data) right before the morning station (ship steaming at

11 knots).
207. Cast 207 was done (with no Ei and Es data) right before the morning station (ship steaming at 11 knots).
208. Cast 208 was done (with no Ei and Es data) right before the morning station (ship steaming at 11 knots).
209. Cast 209 was done simultaneously with SeaSAS cast 249 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 92.
210. Cast 210 was done simultaneously with SeaSAS cast 250.
211. Cast 211 was done simultaneously with SeaSAS cast 251.
212. Cast 212 was done simultaneously with SeaSAS cast 252 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 93.
213. Cast 213 was done simultaneously with SeaSAS cast 253.
214. Cast 214 was done simultaneously with SeaSAS cast 254 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 94.
215. Cast 215 was done simultaneously with SeaSAS cast 255.
216. Cast 216 was done simultaneously with SeaSAS cast 256 and SeaFALLS with DalBOSS (but no SeaBOSS) cast 95.
217. Cast 217 was done simultaneously with SeaSAS cast 257.
218. Cast 218 was done simultaneously with SeaSAS cast 258 (both SASs to stbd and ship steaming at 9 knots).
219. Cast 219 was done simultaneously with SeaSAS cast 259 (both SASs to stbd and ship steaming at 9 knots).
220. Cast 220 was done simultaneously with SeaSAS cast 260 (both SASs to stbd and ship steaming at 9 knots).
221. Cast 221 was done simultaneously with SeaSAS cast 261 (both SASs to stbd and ship steaming at 7 knots).
222. Cast 222 was done simultaneously with SeaSAS cast 262 (both SASs to stbd and ship steaming at 7 knots).
223. Cast 223 was done simultaneously with SeaSAS cast 263 (both SASs to stbd and ship steaming at 7 knots).
224. Cast 224 was done simultaneously with SeaSAS cast 264 (both SASs to stbd and ship steaming at 7 knots).
225. Cast 225 was done simultaneously with SeaSAS cast 265 and LoCNESS cast 76.
226. Cast 226 was done simultaneously with SeaSAS cast 266.
227. Cast 227 was done simultaneously with SeaSAS cast 267 and LoCNESS cast 77.
228. Cast 228 was done simultaneously with SeaSAS cast 268.
229. Cast 229 was done simultaneously with SeaSAS cast 269 and LoCNESS cast 78.
230. Cast 230 was done simultaneously with SeaSAS cast 270.
231. Cast 231 was done simultaneously with SeaSAS cast 271 (both SASs to stbd and ship steaming at 5 knots).
232. Cast 232 was done simultaneously with SeaSAS cast 272 (both SASs to stbd and ship steaming at 5 knots).
233. Cast 233 was done simultaneously with SeaSAS cast 273 (both SASs to stbd and ship steaming at 5 knots).
234. Cast 234 was done right after the afternoon station (ship steaming at 11 knots).
235. Cast 235 was done right after the afternoon station (ship steaming at 11 knots).
236. Cast 236 was done simultaneously with SeaSAS cast 274 and SeaFALLS cast 96.
237. Cast 237 was done simultaneously with SeaSAS cast 275.
238. Cast 238 was done simultaneously with SeaSAS cast 276 and SeaFALLS cast 97.
239. Cast 239 was done simultaneously with SeaSAS cast 277.
240. Cast 240 was done simultaneously with SeaSAS cast 278 and SeaFALLS cast 98.
241. Cast 241 was done simultaneously with SeaSAS cast 279.
242. Cast 242 was done right before the afternoon station (ship steaming at 5 knots).
243. Cast 243 was done right before the afternoon station (ship steaming at 5 knots).
244. Cast 244 was done right before the afternoon station (ship steaming at 5 knots).
245. Cast 245 was done simultaneously with SeaSAS cast 280 (both SASs to stbd) and LoCNESS cast 79.
246. Cast 246 was done simultaneously with SeaSAS cast 281 (both SASs to stbd) and LoCNESS cast 80.
247. Cast 247 was done simultaneously with SeaSAS cast 282 (both SASs to stbd) and LoCNESS cast 81.
248. Cast 248 was done simultaneously with SeaSAS cast 283 (both SASs to stbd) and LoCNESS cast 82.
249. Cast 249 was done simultaneously with SeaSAS cast 284.
250. Cast 250 was done simultaneously with SeaSAS cast 285 (both SASs to stbd) and SeaFALLS cast 99.
251. Cast 251 was done simultaneously with SeaSAS cast 286 (both SASs to stbd).
252. Cast 252 was done simultaneously with SeaSAS cast 287 (both SASs to stbd).
253. Cast 253 was done simultaneously with SeaSAS cast 288 (both SASs to stbd).
254. Cast 254 was done simultaneously with SeaSAS cast 289 (both SASs to stbd).
255. Cast 255 was done simultaneously with SeaSAS cast 290 (both SASs to stbd) and LoCNESS cast 83.
256. Cast 256 was done simultaneously with SeaSAS cast 291 (both SASs to stbd).
257. Cast 257 was done simultaneously with SeaSAS cast 292 (both SASs to stbd) and LoCNESS cast 84.
258. Cast 258 was done simultaneously with SeaSAS cast 293 (both SASs to stbd) and LoCNESS cast 85.
259. Cast 259 was done simultaneously with SeaSAS cast 294 (both SASs to stbd).
260. Cast 260 was done simultaneously with SeaSAS cast 295 (both SASs to stbd) and LoCNESS cast 85.
261. Cast 261 was done simultaneously with SeaSAS cast 296 (both SASs to stbd).
262. Cast 262 was done right after the afternoon station (ship steaming at 5 knots).
263. Cast 263 was done right after the afternoon station (ship steaming at 5 knots).
264. Cast 264 was done right after the afternoon station (ship steaming at 5 knots).
265. Cast 265 was done simultaneously with SeaSAS cast 297.
266. Cast 266 was done simultaneously with SeaSAS cast 298 and SeaFALLS cast 100.
267. Cast 267 was done simultaneously with SeaSAS cast 299.
268. Cast 268 was done simultaneously with SeaSAS cast 300 and SeaFALLS cast 101.
269. Cast 269 was done simultaneously with SeaSAS cast 301 and SeaFALLS cast 102.
270. Cast 270 was done simultaneously with SeaSAS cast 302 and SeaFALLS cast 103.
271. Cast 271 was done simultaneously with SeaSAS cast 303.
272. Cast 272 was done simultaneously with SeaSAS cast 304 and SeaFALLS cast 104.
273. Cast 273 was done simultaneously with SeaSAS cast 305.
274. Cast 274 was done right before the morning station (ship steaming at 11 knots).

275. Cast 275 was done right before the morning station (ship steaming at 11 knots).
276. Cast 276 was done right before the morning station (ship steaming at 11 knots).
277. Cast 277 was done simultaneously with SeaSAS cast 306 and SeaFALLS with DalBOSS cast 105.
278. Cast 278 was done simultaneously with SeaSAS cast 307.
279. Cast 279 was done simultaneously with SeaSAS cast 308 and SeaFALLS with DalBOSS cast 106.
280. Cast 280 was done simultaneously with SeaSAS cast 309.
281. Cast 281 was done simultaneously with SeaSAS cast 310 and SeaFALLS with DalBOSS cast 107.
282. Cast 282 was done simultaneously with SeaSAS cast 311.
283. Cast 283 was done simultaneously with SeaSAS cast 312 and SeaFALLS with DalBOSS cast 108.
284. Cast 284 was done simultaneously with SeaSAS cast 313 and SeaFALLS with DalBOSS cast 109.
285. Cast 285 was done simultaneously with SeaSAS cast 314 (with a little prop wash at the start of the cast).
286. Cast 286 was done simultaneously with SeaSAS cast 315 (with prop wash at the end of the cast).
287. Cast 287 was done simultaneously with SeaSAS cast 316 and LoCNESS cast 87.
288. Cast 288 was done simultaneously with SeaSAS cast 317.
289. Cast 289 was done simultaneously with SeaSAS cast 318 and LoCNESS cast 88.
290. Cast 290 was done simultaneously with SeaSAS cast 319 and LoCNESS cast 89.
291. Cast 291 was done simultaneously with SeaSAS cast 320 and LoCNESS cast 90.
292. Cast 292 was done right before the morning station (ship steaming at 11 knots).
293. Cast 293 was done right before the morning station (ship steaming at 11 knots).
294. Cast 294 was done right before the morning station (ship steaming at 11 knots).
295. Cast 295 was done simultaneously with SeaSAS cast 321 and LoCNESS cast 91.
296. Cast 296 was done simultaneously with SeaSAS cast 322.
297. Cast 297 was done simultaneously with SeaSAS cast 323 and LoCNESS cast 92.
298. Cast 298 was done simultaneously with SeaSAS cast 324 and LoCNESS cast 93.
299. Cast 299 was done simultaneously with SeaSAS cast 325.
300. Cast 300 was done simultaneously with SeaSAS cast 326 and LoCNESS cast 94.
301. Cast 301 was done simultaneously with SeaSAS cast 327.
302. Cast 302 was done simultaneously with SeaSAS cast 328 and LoCNESS cast 95.
303. Cast 303 was done simultaneously with SeaSAS cast 329.
304. Cast 304 was done simultaneously with SeaSAS cast 330 and LoCNESS cast 96.
305. Cast 305 was done simultaneously with SeaSAS cast 331 and SeaFALLS cast 110.
306. Cast 306 was done simultaneously with SeaSAS cast 332 and SeaFALLS cast 111.
307. Cast 307 was done simultaneously with SeaSAS cast 333 and SeaFALLS cast 112.
308. Cast 308 used OCT-069 with sea-viewing for 1.5 mins, then (gray) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
309. Cast 309 used OCT-069 with sea-viewing for 1.5 mins, then (white) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
310. Cast 310 used OCT-069 with sea-viewing for 1.5 mins, then (gray) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
311. Cast 311 used OCT-069 with sea-viewing for 1.5 mins, then (white) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
312. Cast 312 used OCT-069 with sea-viewing for 1.5 mins, then (gray) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
313. Cast 313 used OCT-069 with sea-viewing for 1.5 mins, then (white) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
314. Cast 314 used OCT-069 with sea-viewing for 1.5 mins, then (gray) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
315. Cast 315 used OCT-069 with sea-viewing for 1.5 mins, then (white) plaque-viewing for 1.5 mins (ship steaming at 11.5 knots).
316. Cast 316 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
317. Cast 317 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
318. Cast 318 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
319. Cast 319 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
320. Cast 320 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
321. Cast 321 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
322. Cast 322 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
323. Cast 323 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
324. Cast 324 used OCT-069 and was done right before the morning station (ship steaming at 11.5 knots).
325. Cast 340 was done simultaneously with SeaSAS cast 340 and LoCNESS cast 101.
326. Cast 326 was done simultaneously with SeaSAS cast 341 and LoCNESS cast 102.
327. Cast 327 was done simultaneously with SeaSAS cast 342 and LoCNESS cast 103.
328. Cast 328 was done simultaneously with SeaSAS cast 343 and LoCNESS cast 104.
329. Cast 329 was done simultaneously with SeaSAS cast 344.
330. Cast 330 was done simultaneously with SeaSAS cast 345.
331. Cast 331 was done simultaneously with SeaSAS cast 346 and SeaFALLS cast 115.
332. Cast 332 was done simultaneously with SeaSAS cast 347 and SeaFALLS cast 116 and overlapping with SeaFALLS cast 117.
333. Cast 333 was done simultaneously with SeaSAS cast 348 and SeaFALLS with DalBOSS cast 118.
334. Cast 334 was done simultaneously with SeaSAS cast 349 and SeaFALLS with DalBOSS cast 119.
335. Cast 335 was done simultaneously with SeaSAS cast 350.
336. Cast 336 was done simultaneously with SeaSAS cast 351 and SeaFALLS cast 120.
337. Cast 337 was done simultaneously with SeaSAS cast 352 and SeaFALLS cast 121.
338. Cast 338 was done simultaneously with SeaSAS cast 363 and LoCNESS cast 114.
339. Cast 339 was done simultaneously with SeaSAS cast 364 and LoCNESS cast 115.
340. Cast 340 was done simultaneously with SeaSAS cast 365 and LoCNESS cast 116.

341. Cast 341 was done simultaneously with SeaSAS cast 366 and LoCNESS cast 117.
342. Cast 342 was done simultaneously with SeaSAS cast 367 and LoCNESS cast 118.
343. Cast 343 was done simultaneously with SeaSAS cast 368.
344. Cast 344 was done simultaneously with SeaSAS cast 369 and LoCNESS cast 119.
345. Cast 345 was done simultaneously with SeaSAS cast 370 and LoCNESS cast 120.
346. Cast 346 was done simultaneously with SeaSAS cast 371 and LoCNESS cast 121.
347. Cast 347 was done simultaneously with SeaSAS cast 372 and LoCNESS cast 122.
348. Cast 348 was done simultaneously with SeaSAS cast 373 and LoCNESS cast 123.
349. Cast 349 was done simultaneously with SeaSAS cast 378 and SeaFALLS cast 134.
350. Cast 350 was done simultaneously with SeaSAS cast 379 and SeaFALLS cast 135.
351. Cast 351 was done simultaneously with SeaSAS cast 380 and SeaFALLS cast 136.
352. Cast 352 was done simultaneously with SeaSAS cast 381 and SeaFALLS cast 137.
353. Cast 353 was done simultaneously with SeaSAS cast 382 and SeaFALLS cast 138.
354. Cast 354 was done simultaneously with SeaSAS cast 383 and SeaFALLS cast 139.
355. Cast 355 was done simultaneously with SeaSAS cast 384 and SeaFALLS cast 140.
356. Cast 356 was done simultaneously with SeaSAS cast 385 and SeaFALLS cast 141.