



WOODS HOLE OCEANOGRAPHIC INSTITUTION

Dr. Robert S. Pickart, Physical Oceanography Department

Metadata for Hydrographic data collected during Knorr 194-4 (October 2008)

Chief Scientist: Dr. Robert S. Pickart, Woods Hole Oceanographic Institution

Data submitted by: Terry McKee, Woods Hole Oceanographic Institution

Ship: R/V Knorr (NODC code 316N)

Cruise: 194-4

Dates (GMT) of data collection (begin-end): October 3, 2008 through October 31, 2008

Geographic location-latitude(s)/longitude(s): 65° to 70° N; 15° to 35° W

Dataset: Hydrographic data (CTD two-decibar averaged profiles and Water Sample data)

Name, address, telephone and fax numbers of responsible data submitter:

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Program, project, expedition name: Shelf Basin Exchange South of Denmark Strait:
Forcing, Dynamics, and Large-Scale Impact

Funding agency, grant/contract numbers, date: National Science Foundation Division of
Ocean Sciences

Award Number 0726640

Start Date: August 1, 2007

Expires: July 31, 2013 (estimated)

Award URL:

<http://nsf.gov/awardsearch/showAward.do?AwardNumber=0726640&version=noscript>

Objectives of data collection effort:

The scientific objectives of the program were to 1) determine the pathways and sources of dense water feeding Denmark Strait; 2) identify the mechanisms by which dense water cascades off of the East Greenland shelf south of Denmark Strait; 3) quantify the magnitude of the dense water flux across the shelfbreak and the transport of the components of the boundary current system south of Denmark Strait.

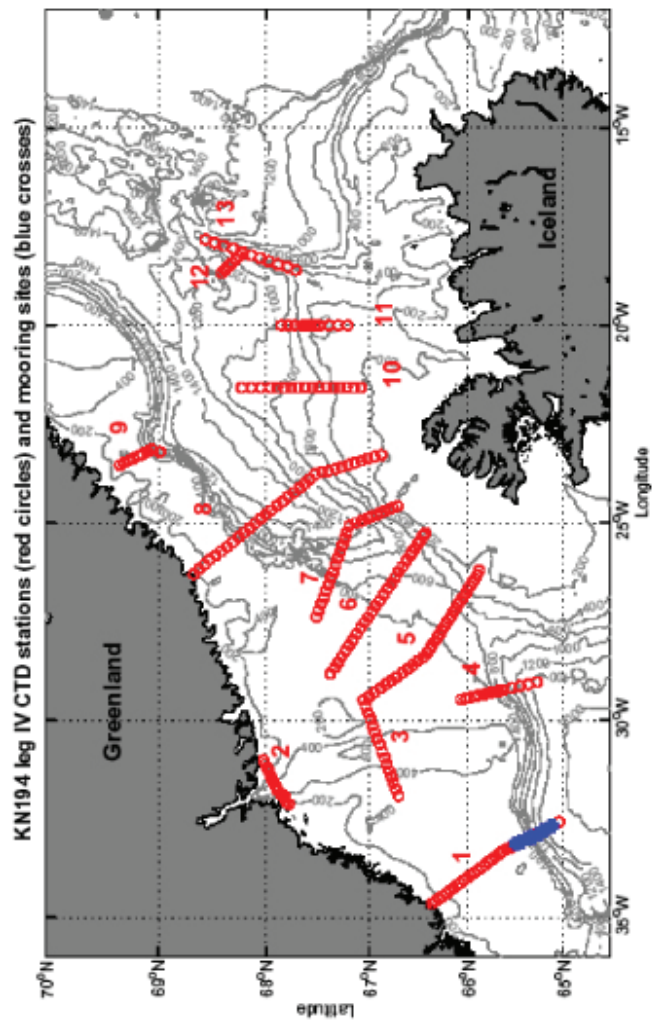


Figure 1: CTD sections occupied during KN194 leg IV (red circles). The moorings that were recovered are denoted by the blue crosses

%	sta	lat	lon	udepth
	1	65.0403	-32.5857	1768.0
	2	65.1218	-32.6878	1625.0
	3	65.2063	-32.7803	1417.0
	4	65.2692	-32.8738	1208.0
	5	65.3042	-32.9443	1044.0
	6	65.3318	-32.9630	910.0
	7	65.3607	-32.9975	732.0
	8	65.3848	-33.0275	526.0
	9	65.4143	-33.0590	280.0
	10	65.4408	-33.0913	252.0
	11	65.4685	-33.1182	275.0
	12	65.5018	-33.1498	259.0
	13	65.5397	-33.1895	233.0
	14	65.5693	-33.2495	24.0
	15	65.6098	-33.2810	260.0
	16	65.6502	-33.3445	280.0
	17	65.6847	-33.4035	304.0
	18	65.7207	-33.4713	313.0
	19	65.7582	-33.5337	331.0
	20	65.7953	-33.5977	342.0
	21	65.8292	-33.6620	341.0
	22	65.8643	-33.7285	335.0
	23	65.9012	-33.7985	312.0
	24	65.9378	-33.8635	275.0
	25	65.9738	-33.9280	267.0
	26	66.0107	-33.9953	266.0
	27	66.0462	-34.0573	270.0
	28	66.0820	-34.1232	278.0
	29	66.1167	-34.1928	277.0
	30	66.1518	-34.2577	268.0
	31	66.1882	-34.3212	259.0
	32	66.2248	-34.3965	251.0
	33	66.2612	-34.4690	220.0
	34	66.2995	-34.5250	213.0
	35	66.3378	-34.5885	189.0
	36	66.3657	-34.6450	170.0
	37	67.7833	-32.1383	165.0
	38	67.8112	-32.0712	93.0
	39	67.8183	-31.9895	177.0
	40	67.8233	-31.9103	253.0
	41	67.8580	-31.8900	177.0
	42	67.8823	-31.7982	414.0
	43	67.8937	-31.7358	533.0
	44	67.9107	-31.6628	505.0
	45	67.9302	-31.5753	497.0
	46	67.9438	-31.4902	476.0
	47	67.9533	-31.4057	298.0
	48	67.9713	-31.3020	186.0
	49	67.9925	-31.2070	165.0
	50	68.0103	-31.1165	170.0
	51	68.0227	-31.0245	141.0
	52	66.7112	-31.9195	336.0
	53	66.7332	-31.7528	371.0
	54	66.7585	-31.5930	402.0
	55	66.7798	-31.4377	403.0
	56	66.8022	-31.2892	358.0
	57	66.8263	-31.1205	481.0
	58	66.8458	-30.9573	522.0
	59	66.8727	-30.7947	541.0
	60	66.8952	-30.6293	489.0

61	66.9192	-30.4678	427.0
62	66.9428	-30.3077	356.0
63	66.9643	-30.1458	317.0
64	66.9878	-29.9838	276.0
65	67.0110	-29.8202	259.0
66	67.0332	-29.6587	246.0
67	67.0567	-29.4937	277.0
68	66.0745	-29.4787	303.0
69	66.0277	-29.4537	300.0
70	65.9852	-29.4285	290.0
71	65.9405	-29.4052	308.0
72	65.8957	-29.3803	323.0
73	65.8357	-29.3673	346.0
74	65.8100	-29.3303	359.0
75	65.7938	-29.3063	378.0
76	65.7675	-29.3035	426.0
77	65.7457	-29.2945	478.0
78	65.7235	-29.2820	533.0
79	65.7030	-29.2717	617.0
80	65.6793	-29.2612	694.0
81	65.6362	-29.2338	805.0
82	65.5488	-29.1850	1046.0
83	65.4620	-29.1380	1245.0
84	65.3742	-29.0888	1393.0
85	65.2835	-29.0365	1513.0
86	67.0017	-29.3960	269.0
87	66.9467	-29.2970	298.0
88	66.8928	-29.1982	295.0
89	66.8372	-29.0980	285.0
90	66.7823	-29.0043	350.0
91	66.7260	-28.9022	355.0
92	66.6717	-28.8003	337.0
93	66.6173	-28.7057	326.0
94	66.5627	-28.6053	333.0
95	66.5115	-28.5062	333.0
96	66.4543	-28.4062	314.0
97	66.4167	-28.2888	340.0
98	66.3923	-28.1928	349.0
99	66.3680	-28.1003	353.0
100	66.3437	-28.0077	348.0
101	66.3175	-27.9217	355.0
102	66.2950	-27.8202	388.0
103	66.2705	-27.7252	479.0
104	66.2467	-27.6368	504.0
105	66.2222	-27.5377	504.0
106	66.1980	-27.4438	505.0
107	66.1738	-27.3508	501.0
108	66.1497	-27.2567	531.0
109	66.1257	-27.1632	629.0
110	66.1032	-27.0682	667.0
111	66.0782	-26.9747	660.0
112	66.0525	-26.8818	585.0
113	66.0270	-26.7918	467.0
114	66.0037	-26.6953	342.0
115	65.9790	-26.6038	289.0
116	65.9552	-26.5102	292.0
117	65.9307	-26.4158	298.0
118	65.9088	-26.3205	296.0
119	65.8867	-26.2142	285.0
120	66.4412	-25.2628	186.0
121	66.4608	-25.3257	277.0

122	66.4910	-25.4545	469.0
123	66.5148	-25.5400	584.0
124	66.5413	-25.6422	692.0
125	66.5677	-25.7318	738.0
126	66.5910	-25.8297	751.0
127	66.6290	-25.9710	712.0
128	66.6673	-26.1100	676.0
129	66.7057	-26.2403	636.0
130	66.7422	-26.3920	601.0
131	66.7795	-26.5362	599.0
132	66.8177	-26.6775	562.0
133	66.8552	-26.8233	519.0
134	66.8945	-26.9710	433.0
135	66.9353	-27.1063	393.0
136	66.9722	-27.2480	378.0
137	67.0092	-27.3950	377.0
138	67.0452	-27.5265	382.0
139	67.0843	-27.6707	384.0
140	67.1213	-27.8168	352.0
141	67.1602	-27.9610	349.0
142	67.1982	-28.1012	339.0
143	67.2342	-28.2488	290.0
144	67.2720	-28.4007	311.0
145	67.3058	-28.5513	282.0
146	67.3430	-28.6862	255.0
147	67.3802	-28.8307	251.0
148	67.5157	-27.3895	265.0
149	67.4948	-27.2240	284.0
150	67.4710	-27.0600	257.0
151	67.4467	-26.8962	301.0
152	67.4230	-26.7290	299.0
153	67.3997	-26.5632	365.0
154	67.3775	-26.4010	564.0
155	67.3553	-26.2430	685.0
156	67.3322	-26.0728	813.0
157	67.3108	-25.9017	922.0
158	67.2872	-25.7367	1040.0
159	67.2670	-25.5765	1138.0
160	67.2417	-25.4120	1218.0
161	67.2202	-25.2507	1293.0
162	67.1963	-25.0862	1280.0
163	67.1357	-25.0148	1185.0
164	67.0732	-24.9492	1073.0
165	67.0118	-24.8842	942.0
166	66.9717	-24.8390	866.0
167	66.9288	-24.7942	730.0
168	66.8868	-24.7530	519.0
169	66.8457	-24.7070	342.0
170	66.8050	-24.6597	206.0
171	66.7632	-24.6203	156.0
172	66.7202	-24.5803	149.0
173	66.8793	-23.2827	239.0
174	66.9483	-23.3275	244.0
175	67.0132	-23.3813	246.0
176	67.0760	-23.4263	248.0
177	67.1408	-23.4755	261.0
178	67.2058	-23.5287	298.0
179	67.2677	-23.5865	411.0
180	67.3323	-23.6400	512.0
181	67.3995	-23.6888	620.0
182	67.4618	-23.7193	713.0

183	67.5270	-23.7717	846.0
184	67.5797	-23.8990	983.0
185	67.6322	-24.0155	1140.0
186	67.6800	-24.1292	1246.0
187	67.7353	-24.2350	1360.0
188	67.7887	-24.3412	1442.0
189	67.8422	-24.4565	1498.0
190	67.8948	-24.5685	1498.0
191	67.9473	-24.6792	1455.0
192	68.0002	-24.7982	1379.0
193	68.0525	-24.9092	1284.0
194	68.1045	-25.0218	1130.0
195	68.1557	-25.1442	882.0
196	68.2092	-25.2553	502.0
197	68.2603	-25.3690	355.0
198	68.3143	-25.4972	312.0
199	68.3668	-25.6095	303.0
200	68.4210	-25.7185	319.0
201	68.4728	-25.8278	337.0
202	68.5293	-25.9400	303.0
203	68.5780	-26.0588	177.0
204	68.6282	-26.1765	178.0
205	68.6765	-26.3057	106.0
206	69.3498	-23.5380	265.0
207	69.3082	-23.4828	267.0
208	69.2675	-23.4270	249.0
209	69.2258	-23.3702	227.0
210	69.1753	-23.3037	266.0
211	69.1440	-23.2628	241.0
212	69.1025	-23.2023	475.0
213	69.0595	-23.1475	897.0
214	68.9852	-23.2032	922.0
215	68.2280	-21.5767	943.0
216	68.1390	-21.5790	910.0
217	68.0472	-21.5813	877.0
218	67.9568	-21.5812	848.0
219	67.8920	-21.5847	823.0
220	67.8258	-21.5858	802.0
221	67.7583	-21.5838	765.0
222	67.6910	-21.5815	727.0
223	67.6237	-21.5758	698.0
224	67.5555	-21.5785	665.0
225	67.4902	-21.5713	617.0
226	67.4202	-21.5737	525.0
227	67.3538	-21.5783	367.0
228	67.2865	-21.5763	302.0
229	67.2193	-21.5792	275.0
230	67.1505	-21.5830	223.0
231	67.0830	-21.5798	237.0
232	67.2142	-20.0013	275.0
233	67.3042	-19.9992	405.0
234	67.3948	-20.0025	436.0
235	67.4852	-20.0015	438.0
236	67.5308	-19.9987	425.0
237	67.5743	-19.9978	407.0
238	67.6022	-19.9992	435.0
239	67.6280	-20.0020	478.0
240	67.6562	-20.0022	520.0
241	67.7218	-20.0010	639.0
242	67.7885	-19.9995	800.0
243	67.8537	-20.0048	882.0

244	68.0430	-18.7988	1178.0
245	68.2237	-18.1552	700.0
246	68.2550	-18.2443	780.0
247	68.2847	-18.3268	933.0
248	68.3180	-18.4125	1042.0
249	68.3492	-18.5002	1420.0
250	68.3817	-18.5872	1153.0
251	68.4137	-18.6742	1370.0
252	67.7142	-18.5985	578.0
253	67.7997	-18.5207	462.0
254	67.8857	-18.4512	587.0
255	67.9715	-18.3708	495.0
256	68.0558	-18.2950	720.0
257	68.1417	-18.2163	747.0
258	68.2257	-18.1382	663.0
259	68.3115	-18.0598	750.0
260	68.3965	-17.9825	807.0
261	68.4813	-17.9037	850.0
262	68.5668	-17.8258	884.0
263	68.5668	-17.8258	868.0

Data collected on cruise R/V Knorr 194-4

263 CTD downcast files: [contained in 2008_011_CTD.zip]

Naming convention: kn194xxx.dcc, where xxx is station number from 001 to 263 and .dcc extension indicated downcast-calibrated.

Casts were processed using standard Seabird SBE911 data processing routines, and averaged to two-decibar pressure bins. The conductivity sensors were calibrated using bottle salinities.

Parameters and units:

Pressure: decibars

Temperature (primary and secondary sensor): degrees C

Salinity (primary and secondary sensor): PSU

Oxygen Current: volts

Oxygen: milliliters/liter

Transmissivity: percent

Fluorescence: milligrams/meter³

Altimeter: meters from bottom

263 water sample files: [contained in 2008_011_WS.zip]

Naming convention as CTD cast files with extension .nut

Parameters and units:

Bottle Number

Pressure: decibars

CTD Primary Temperature (T1(90)): degrees C

CTD Secondary Temperature (T2(90)): degrees C

CTD Potential Temperature (TH1(68)): degrees C

CTD Potential Temperature (TH2(68)): degrees C

CTD Primary Salinity (SAL1): PSU

CTD Secondary Salinity (SAL2): PSU

CTD Oxygen (OXY1): milliliters/liter

Bottle Salinity (SAL): PSU

Quality Word: QUAL: 2=good; 1= not-calibrated; 9 = not measured

[NOTE: CTD salinities reported in the .nut files are uncalibrated.]

Citations:

Våge, R. S. Pickart, M.A. Spall, H. Valdimarsson, S. Jonsson, D.J. Torres, S. Osterhus, T. Eldevik, 2011: Significant role of the North Icelandic Jet in the formation of Denmark Strait Overflow Water *Nature Geoscience*, **4** 723-727. doi:10.1038/ngeo1234

Magaldi, M. G., T. W. N. Haine, and R. S. Pickart, 2011: On the Nature and Variability of the East Greenland Spill Jet: A Case Study in Summer 2003. *Journal of Physical Oceanography*, **41** 2307-2327. doi: 10.1175/JPO-D-10-05004.1.

Brearley, J.A., R. S. Pickart, H. Valdimarsson, S. Jonsson, R. W. Schmitt, T. W. Haine, 2012: The East Greenland Boundary Current System South of Denmark Strait. *Deep Sea Research I*, **63**, 1-19.

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