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Hydrographic conditions on Hamilton Inlet Bank (Div. 2J)
in early December 1977

by

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Introduction

The annual presentation of the mean hydrographic conditions along the Seal Island Section (ICNAF Subarea 2) as obtained during numerous groundfish surveys by *RV "Walther Herwig"* and *RV "Anton Dohrn"* is continued by the observations made from the latter vessel between 1 December and 3 December 1977.

Our mean values of temperature and salinity are thus based on data starting in October 1969. The greatermost part of hydrographic mean values along the ICNAF Standard Oceanographic Section was, however, collected during the end of November and the beginning of December in the years denoted below.

Mean values of temperature and salinity along the Standard Section

According to ICNAF Circular Letter 76/79 the positions of the hydrographic stations were chosen: Starting with 53°14'N, 55°39'W as station S1, S2 to S9 follow the list mentioned above. Table 1 to 4 show the mean values of temperature and salinity at Standard Stations 1 to 9. Given the mean values of both parameters for each year and water layer (0-50m; 50-200m; 0-200m) a computer programme calculated and listed the means for the distinct layers. "NO OBS" denotes no observation.

The tables 1 to 4 are the basis for the calculations of temperature and salinity deviations, $(\bar{t} - t)$ and $(\bar{s} - s)$ which are given in table 5 and 6. They reveal that the hydrographic

conditions along the Seal Island Section were extraordinary warm and salty. During 1974 and 1975 when the measurements were performed also in early December (STEIN, 1975; STEIN, 1976) the mean temperature was up to 2°C colder than during 1977.

Summarizing one can say that the measurements performed in early December 1977 reveal a warming of the Labrador Current which is up to 1.76°C above the calculated mean temperatures. As for the salinity deviations largest changes were observed at the same station (S6) were the temperature in all water layers was 1°C warmer than usual. The tendency of increasing temperature, as observed since 1975 along this section, thus continues.

References

- STEIN, M., 1975: Hydrographic conditions on Hamilton Inlet Bank (Div. 2J) in Fall 1974 ICNAF Res.Doc. 75/29
- STEIN, M., 1976: Hydrographic conditions on Hamilton Inlet Bank (Div. 2J) in the fall of 1975 ICNAF Res.Doc. 76/VI/88

Table 1:

STANDARD		STATION S 1	
YEAR	0 - 50M	50 - 200M	0 - 200M
1973	+0.300	NO OBS.	NO OBS.
1974	-0.120	NO OBS.	NO OBS.

MEAN 0.090

STANDARD		STATION S 1	
YEAR	0 - 50M	50 - 200M	0 - 200M
1973	+32.636	NO OBS.	NO OBS.
1974	+32.528	NO OBS.	NO OBS.

MEAN 32.582

STANDARD		STATION S 2	
YEAR	0 - 50M	50 - 200M	0 - 200M
1972	-0.340	-0.560	-0.520
1973	+0.360	+0.830	+0.730
1974	-0.200	+0.240	+0.150
1976	+0.980	NO OBS.	NO OBS.

MEAN 0.200 0.170 0.120

STANDARD		STATION S 2	
YEAR	0 - 50M	50 - 200M	0 - 200M
1972	+32.488	+33.068	+32.945
1973	+32.841	+33.395	+33.278
1974	+32.766	+33.089	+33.089
1976	+32.186	NO OBS.	NO OBS.

MEAN 32.570 33.184 33.104

STANDARD		STATION S 3	
YEAR	0 - 50M	50 - 200M	0 - 200M
1969	+0.730	+0.080	+0.210
1971	+0.390	NO OBS.	NO OBS.
1973	+0.390	NO OBS.	NO OBS.
1974	+0.000	NO OBS.	NO OBS.
1975	+0.310	+0.860	+0.750
1976	+1.100	+0.370	+0.550
1977	+0.740	+2.200	+1.850

MEAN 0.522 0.877 0.840

STANDARD		STATION S 3	
YEAR	0 - 50M	50 - 200M	0 - 200M
1969	+32.778	+33.281	+33.178
1971	+32.691	NO OBS.	NO OBS.
1973	+32.843	NO OBS.	NO OBS.
1974	+33.100	NO OBS.	NO OBS.
1975	+32.831	+33.238	+33.155
1976	+32.317	+32.864	+32.733
1977	+32.960	+33.655	+33.488

MEAN 32.788 33.259 33.138

Table 2:

STANDARD - STATION S 4
 YEAR 0 - 50M 50 - 200M 0 - 200M

1969	+0.070	NO OBS.	NO OBS.
1971	+0.350	NO OBS.	NO OBS.
1973	+0.290	NO OBS.	NO OBS.
1974	-0.190	NO OBS.	NO OBS.
1975	+0.420	NO OBS.	NO OBS.
1976	+0.640	NO OBS.	NO OBS.
1977	+0.710	NO OBS.	NO OBS.

MEAN 0.327

STANDARD - STATION S 4
 YEAR 0 - 50M 50 - 200M 0 - 200M

1969	+32.896	NO OBS.	NO OBS.
1971	+32.731	NO OBS.	NO OBS.
1973	+32.753	NO OBS.	NO OBS.
1974	+32.707	NO OBS.	NO OBS.
1975	+32.799	NO OBS.	NO OBS.
1976	+32.442	NO OBS.	NO OBS.
1977	+32.885	NO OBS.	NO OBS.

MEAN 32.744

STANDARD - STATION S 5
 YEAR 0 - 50M 50 - 200M 0 - 200M

1969	+0.730	+1.470	+1.330
1972	-0.560	NO OBS.	NO OBS.
1973	+0.220	+0.280	+0.270
1974	-0.090	+0.980	+0.750
1975	+0.380	NO OBS.	NO OBS.
1976	+0.310	NO OBS.	NO OBS.
1977	+0.890	NO OBS.	NO OBS.

MEAN 0.268 0.910 0.783

STANDARD - STATION S 5
 YEAR 0 - 50M 50 - 200M 0 - 200M

1969	+33.045	+33.567	+33.457
1972	+32.527	NO OBS.	NO OBS.
1973	+32.748	+32.968	+32.923
1974	+32.793	+33.564	+33.402
1975	+33.001	NO OBS.	NO OBS.
1976	+32.686	NO OBS.	NO OBS.
1977	+33.040	NO OBS.	NO OBS.

MEAN 32.834 33.366 33.260

Table 3:

STANDARD - STATION S 6			
YEAR	0 - 50M	50 - 200M	0 - 200M
1969	+1.720	+2.590	+2.400
1971	+0.360	NO OBS.	NO OBS.
1973	+0.140	+0.300	+0.270
1974	+0.100	+1.430	+1.150
1975	+0.490	+1.270	+1.100
1976	+0.970	+1.180	+1.130
1977	+1.940	+3.460	+3.070

STANDARD - STATION S 6			
YEAR	0 - 50M	50 - 200M	0 - 200M
1969	+33.449	+33.989	+33.875
1971	+32.762	NO OBS.	NO OBS.
1973	+32.719	+33.186	+33.131
1974	+33.221	+33.762	+33.656
1975	+33.013	+33.505	+33.401
1976	+33.426	+33.701	+33.636
1977	+33.677	+34.291	+34.134

STANDARD - STATION S 7			
YEAR	0 - 50M	50 - 200M	0 - 200M
1971	+0.280	+0.960	+0.820
1973	+0.250	+1.170	+0.970
1974	+0.890	+1.910	+1.680
1975	+1.060	+1.640	+1.520
1976	+1.480	+2.080	+1.940
1977	+1.530	+3.100	+2.720

STANDARD - STATION S 7			
YEAR	0 - 50M	50 - 200M	0 - 200M
1971	+32.751	+33.222	+33.125
1973	+33.019	+33.735	+33.586
1974	+33.617	+33.944	+33.871
1975	+33.613	+33.938	+33.871
1976	+33.611	+34.062	+33.951
1977	+33.509	+34.187	+34.022

STANDARD - STATION S 7			
YEAR	0 - 50M	50 - 200M	0 - 200M
MEAN	33.353	33.848	33.737

Table 4:

STANDARD		STATION		S 8
YEAR	0 - 50M	50 - 200M	0 - 200M	
1969	+3.290	+3.580	+3.510	
1971	+1.720	+2.750	+2.530	
1972	NO OBS.	NO OBS.	NO OBS.	
1973	+2.500	+3.030	+2.920	
1974	+1.900	+3.020	+2.780	
1975	NO OBS.	+2.710	+2.710	
1976	+2.400	+2.960	+2.810	
1977	+3.170	+3.790	+3.630	

MEAN 2.496 3.120 2.984

STANDARD		STATION		S 8
YEAR	0 - 50M	50 - 200M	0 - 200M	

1969	+34.048	+34.446	+34.364
1971	+33.728	+34.291	+34.172
1972	+34.389	+34.498	+34.475
1973	+33.966	+34.503	+34.389
1974	+34.124	+34.523	+34.437
1975	+33.791	+34.192	+34.109
1976	+33.955	+34.353	+34.256
1977	+34.303	+34.541	+34.481

MEAN 34.038 34.418 34.335

STANDARD		STATION		S 9
YEAR	0 - 50M	50 - 200M	0 - 200M	

1969	+4.510	+4.190	+4.260
1971	+2.220	+3.230	+3.020
1972	+0.660	+2.330	+1.980
1973	+3.190	+3.520	+3.450
1974	+2.180	+3.190	+2.970
1975	+3.270	+3.680	+3.590
1976	+3.100	+3.370	+3.310
1977	+3.730	+4.040	+3.960

MEAN 2.857 3.443 3.317

STANDARD		STATION		S 9
YEAR	0 - 50M	50 - 200M	0 - 200M	

1969	+34.578	+34.804	+34.756
1971	+33.912	+34.513	+34.385
1972	+33.604	+34.281	+34.138
1973	+34.244	+34.611	+34.533
1974	+34.184	+34.445	+34.331
1975	+34.487	+34.694	+34.650
1976	+34.031	+34.434	+34.337
1977	+34.524	+34.659	+34.626

MEAN 34.195 34.555 34.469

Table 5 : Mean temperature (\bar{t} = average 1969-77, excl. 1970) and mean temperature differences in degrees centigrade as compared to 1977 ($\bar{t} - t$) in distinct water layers on the Seal Island Section in early December 1977.

station layer	S3	S4	S5	S6	S7	S8	S9	
0-50m	\bar{t}	0.52	0.33	0.27	0.82	0.92	2.50	2.86
	$\bar{t} - t$	-0.22	-0.38	-0.62	-1.12	-0.62	-0.67	-0.87
50-200m	\bar{t}	0.88	-	0.91	1.71	1.81	3.12	3.44
	$\bar{t} - t$	-1.32	-	-	-1.76	-1.29	-0.67	-0.60
0-200m	\bar{t}	0.84	-	0.78	1.52	1.61	2.98	3.32
	$\bar{t} - t$	-1.01	-	-	-1.55	-1.11	-0.65	-0.64

Table 6 : Mean salinity (\bar{s} = average 1969-77, excl. 1970) and mean salinity differences in ppm as compared to 1977 ($\bar{s} - s$) in distinct water layers on the Seal Island Section in early December 1977.

station layer	S3	S4	S5	S6	S7	S8	S9	
0-50m	\bar{s}	32.79	32.74	32.83	33.18	33.35	34.04	34.20
	$\bar{s} - s$	- 0.17	- 0.14	- 0.21	- 0.50	- 0.16	- 0.27	- 0.33
50-200m	\bar{s}	33.26	-	33.37	33.74	33.85	34.42	34.56
	$\bar{s} - s$	- 0.40	-	-	- 0.55	- 0.34	- 0.12	- 0.10
0-200m	\bar{s}	33.14	-	33.26	33.64	33.74	34.34	34.47
	$\bar{s} - s$	- 0.35	-	-	- 0.50	- 0.29	- 0.15	- 0.16

