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Mean Temperature and Salinity Conditions
At the Mouth of the Bay of Fundy, 1951-1980

by

K. F. Drinkwater

Department of Fisheries and Oceans, Marine Ecology Laboratory
Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, N. S.

Long-term monitoring of temperature and salinity at Prince 5, a station located at the mouth of the Bay of Fundy (Fig. 1), has been conducted by the St. Andrews Biological Station since the late 1920's. Measurements were taken approximately once per month at standard depths using reversing thermometers and water bottles. Salinities were determined initially by titration methods and more recently using salinometers. The data set represents the longest continuous record of its type off eastern Canada.

This report presents the long-term means of temperature and salinity at Prince 5 for the period 1951 to 1980. The 30-yr period is in compliance with the World Meteorological Organization standard base period and the recommendations of the NAFO Scientific Council. Data prior to 1973 were obtained from the Marine Environmental Data Service in Ottawa. Data from 1973 to 1980 were received directly from the St. Andrews Biological Station (J. Hull, personal communication). After 1968 temperatures were recorded only to the nearest tenth of a degree.

Densities were calculated from the temperature and salinity data and then the data were edited (smoothed) to remove any density inversions. Such inversions were assumed to have occurred through instrument or recording errors. After editing, the data were linearly interpolated to standard depths (0, 10, 25, 50, 75 and 90 m) where necessary. Monthly means and their standard deviations were then calculated (Fig. 2) and the results are listed in Tables 1 and 2 together with the number of observations.

The weak vertical gradients during most months is a consequence of the strong tidal mixing in the Bay of Fundy region. The surface salinity minimum in May corresponds in time with the peak runoff from the Saint John River. It is also the period of maximum stratification.

Table 1

Monthly mean temperature, standard deviation and number of observations
for the period 1951-1980.

Depth (m)	Temperature (°C)											
	J	F	M	A	M	J	J	A	S	O	N	D
0	3.9	1.9	2.0	3.0	5.1	7.5	9.7	11.2	11.6	10.5	9.1	6.7
	1.2	1.1	1.0	1.1	0.9	1.6	1.1	1.0	1.1	0.8	1.2	1.0
	28	29	29	28	28	29	29	29	29	28	29	27
10	4.2	2.1	2.0	2.9	4.6	6.7	8.9	10.7	11.2	10.5	9.1	6.7
	1.1	1.0	1.0	0.9	1.0	1.0	1.0	1.2	0.9	0.9	1.0	1.1
	28	28	29	29	28	29	29	29	29	29	29	28
25	4.4	2.3	2.1	2.9	4.5	6.4	8.6	10.5	11.0	10.5	9.2	6.8
	1.1	0.9	1.0	0.9	0.8	0.8	1.0	1.1	0.9	0.9	0.8	1.0
	28	28	29	29	28	29	29	29	29	28	29	28
50	4.4	2.4	2.1	2.8	4.4	6.2	8.3	10.3	10.8	10.5	9.2	6.8
	1.1	0.9	1.0	0.9	0.8	0.8	1.1	1.3	1.0	0.9	0.8	1.1
	28	28	29	29	28	29	29	29	29	28	29	28
75	4.6	2.5	2.1	2.8	4.2	6.0	8.0	9.9	10.5	10.4	9.2	6.9
	1.2	1.0	1.1	0.9	0.8	0.9	1.2	1.3	1.0	0.8	0.9	1.1
	28	28	29	29	28	29	29	29	29	28	29	28
90	4.7	2.6	2.4	2.8	4.0	5.6	7.6	9.4	9.9	10.3	9.3	6.9
	1.3	1.0	1.2	1.0	0.9	1.0	1.3	1.4	1.0	0.9	0.9	1.1
	28	28	29	29	28	28	29	29	29	28	29	27

Table 2

Monthly mean salinity, standard deviation and number of observations
for the period 1951-1980.

Depth (m)	Salinity											
	J	F	M	A	M	J	J	A	S	O	N	D
0	32.17	31.95	31.73	31.19	30.54	31.11	31.54	31.83	32.19	32.46	32.32	32.28
	.29	.46	.41	.51	1.30	.51	.31	.29	.19	.30	.49	.45
	28	29	29	26	27	28	26	26	26	26	25	24
10	32.21	31.98	31.78	31.34	30.90	31.25	31.58	31.88	32.26	32.52	32.38	32.30
	.29	.42	.38	.42	.71	.35	.29	.27	.21	.25	.43	.46
	28	29	29	27	27	28	26	26	27	26	25	24
25	32.26	32.01	31.84	31.49	31.16	31.35	31.66	31.96	32.30	32.55	32.42	32.33
	.28	.40	.33	.37	.49	.33	.27	.26	.20	.24	.42	.44
	28	29	29	27	27	28	26	26	27	26	26	24
50	32.30	32.06	31.88	31.62	31.45	31.46	31.74	32.02	32.38	32.58	32.47	32.39
	.28	.39	.33	.37	.30	.30	.23	.23	.21	.25	.39	.43
	28	29	29	27	27	28	26	26	27	26	26	24
75	32.34	32.10	31.94	31.79	31.63	31.60	31.88	32.14	32.49	32.67	32.57	32.43
	.28	.36	.33	.35	.31	.36	.25	.25	.28	.25	.37	.41
	27	29	29	26	27	27	26	26	27	26	25	24
90	32.45	32.16	32.06	31.90	31.84	31.87	32.12	32.34	32.68	32.75	32.70	32.51
	.32	.33	.31	.28	.31	.40	.34	.27	.29	.26	.42	.39
	27	29	29	25	26	26	26	26	27	25	25	24

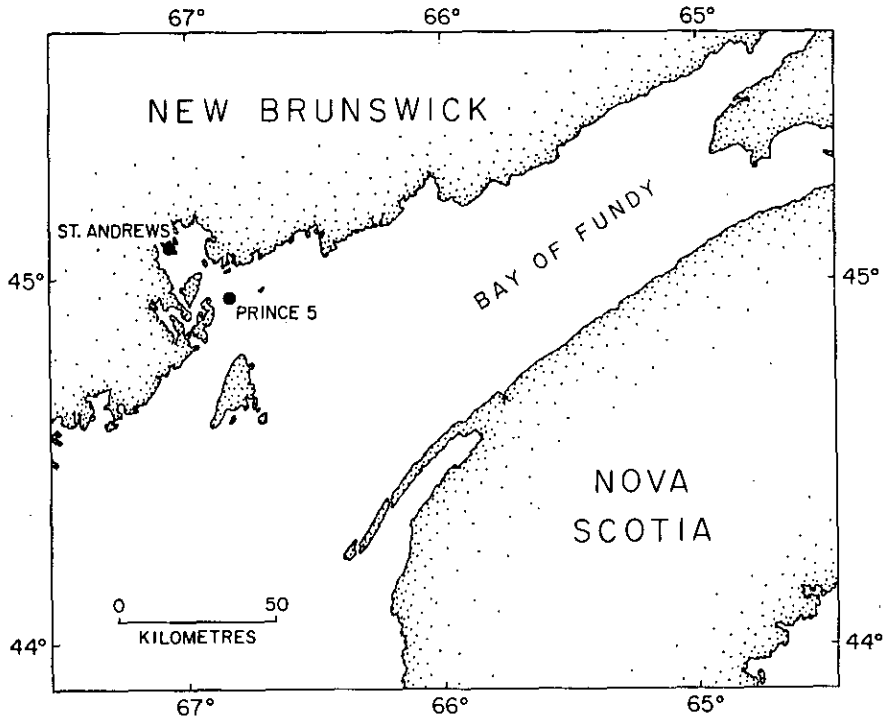


Fig. 1 Map of the Bay of Fundy showing location of Prince 5 Station.

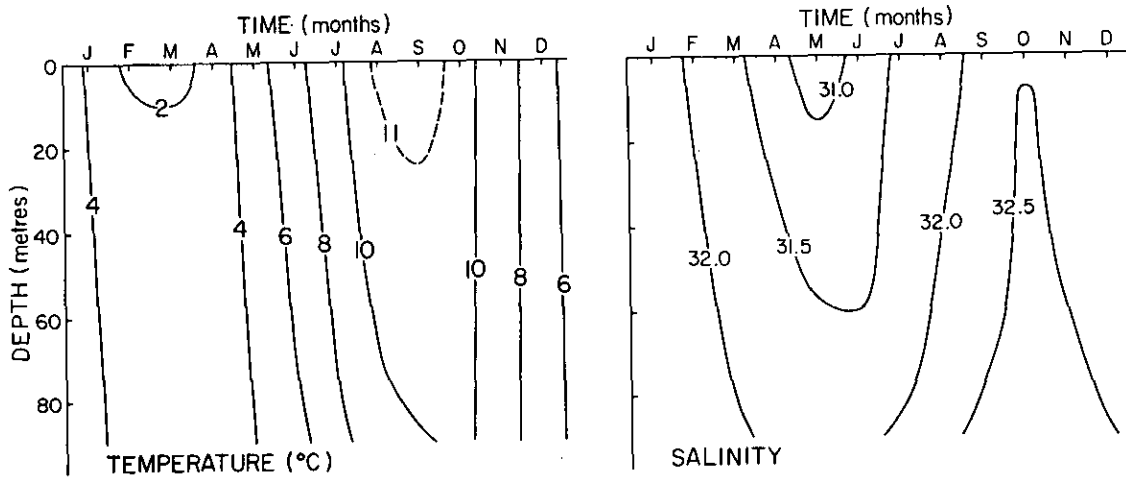


Fig. 2 Vertical profiles of the monthly mean temperature and salinity at Prince 5 for the years 1951-1980.