Northwest Atlantic Fisheries Organization

Serial No. N870

NAFO SCR Doc. 84/VI/81

SCIENTIFIC COUNCIL MEETING - JUNE 1984

Ocean Climate at Station 27, Report for 1983

by

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Station 27 (47°33'N; 52°35'W) was ocupied by NAFC research vessels 29 times in 1983. A large gap in the time-series appears, with only one observation from October 1982 to late April 1983. This was an observation on Day 31 1984 (by R. Wells), showing nearly isothermal conditions of -0.8 to -0.5°C. The following observation on Day 116 indicates substantial solar warming, about +1.5°C, to over 20 meters, with nearly uniform density water of -1.5°C beneath. Presumably, then, there was a late-winter isothermal condition of very cold water, for which no observations exist. In comparison to Keeley (1981), the surface temperature for early February is low by about 0.7 degrees from the long-term mean, although the salinity is normal.

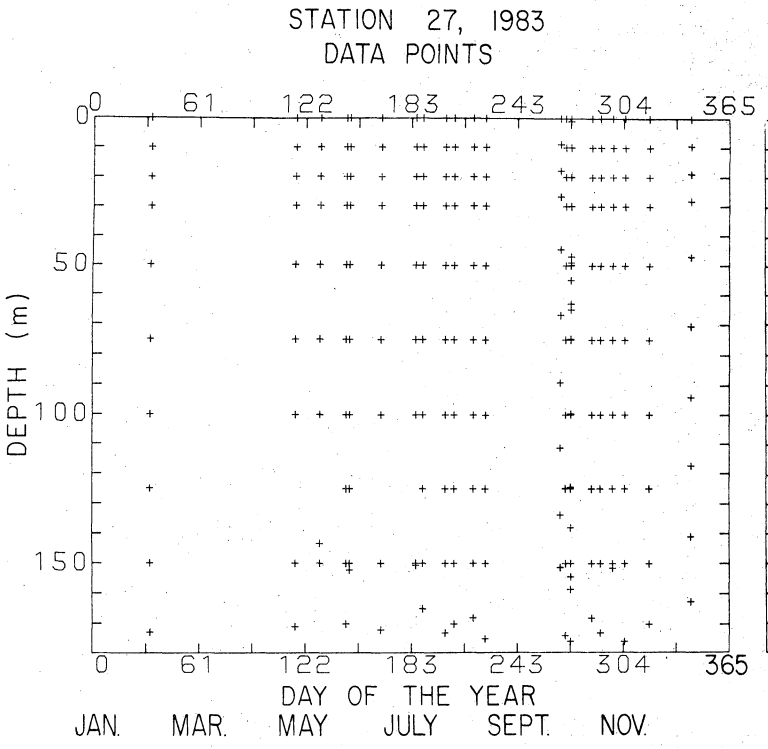
At the end of April, surface salinity is low, corresponding to the melt of much pack ice which prevented earlier occupation of Station 27. The subsurface waters (30 meters and below) are very cold in spring 1983 compared to the historical mean. The surface water, stabilized by low salinities in the spring, is warmer since solar energy is trapped in a shallower layer.

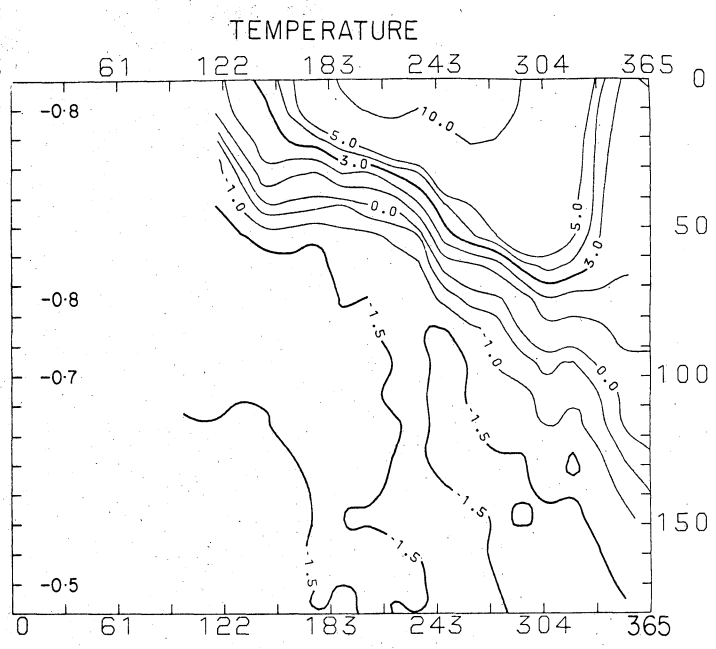
The abundance of water below -1.5°C throughout the summer, fall and winter marks 1983 as a cold year overall, corresponding to reports of intense cold in Labrador and Greenland. The winter of 1983 was mild in Newfoundland, and was an important 'El Nino' year in the Pacific Ocean. Deep salinities are within 0.2 of the historical mean through the year. The September-October freshwater pulse is less salty than average, with a minimum observed of 30.64, compared to the climatological expectation of 31.2.

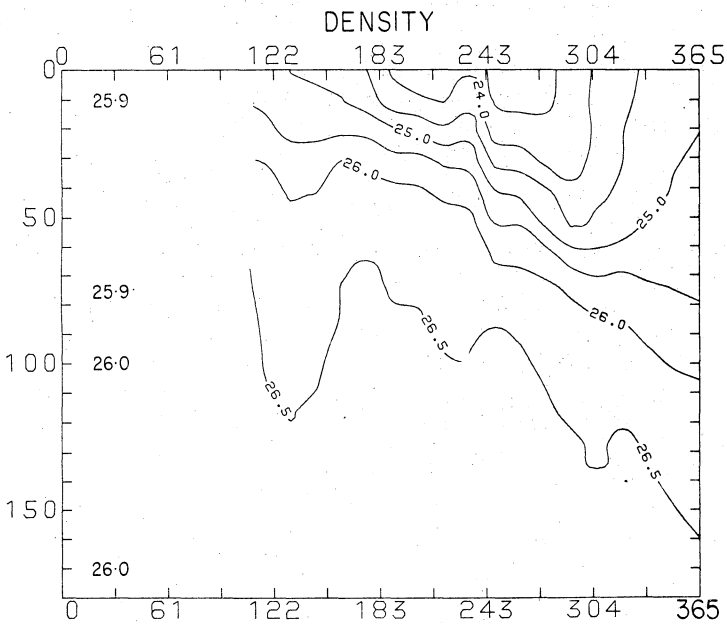
The maximum sea-surface temperature observed in 1983 was 12.4°C, effectively the same as the historical mean maximum temperature.

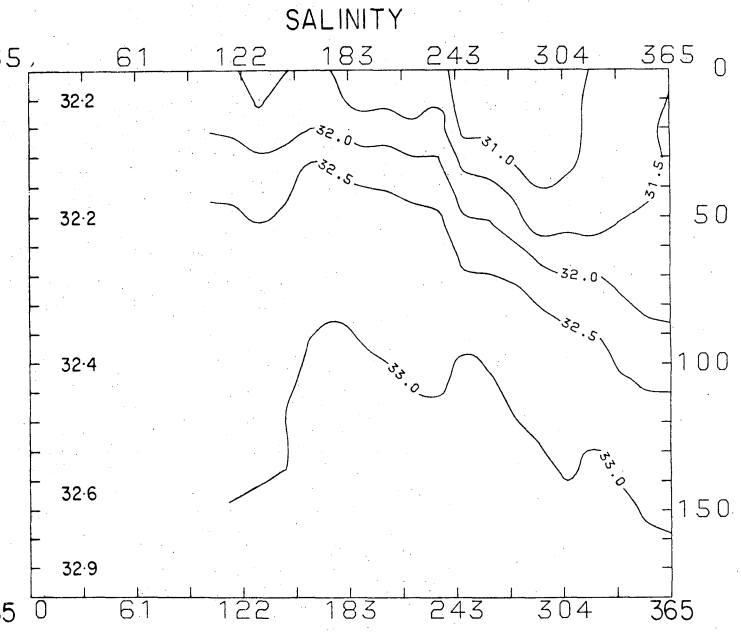
Reference

Keeley, J. R. (1981). Temperature, Salinity and Sigma-t at Station 27 (47°30'N, 52°33'W). An Analysis of Historical Data. Government of Canada, Fisheries and Oceans, Marine Environmental Services. Technical Report No. 8, 56 p + 2 microfishe.


STATION 27, 1983
DATA POINTS
DEPTH (m)
0
50
100
150
0
61
122
183
243
304
365
DAY OF THE YEAR
JAN.
MAR.
MAY
JULY
SEPT.
NOV.


TEMPERATURE
-0·8
-0·8
-0·7
-0·5
10.0
5.0
3.0
1.0
0.0
-1.0
-1.5
0
50
100
150
61
122
183
243
304
365


DENSITY
25·9
25·9
26·0
26·0
24.0
25.0
26.0
26.5
0
50
100
150
61
122
183
243
304
365


SALINITY
32·2
32·2
32·4
32·6
32·9
31.0
31.5
32.0
32.5
33.0
0
50
100
150
61
122
183
243
304
365