

Sea surface temperatures in the northwestern Atlantic in 1980

(Figures 22-34; Tables 4-5)

Sea surface temperature (SST) data, principally collected from cooling water intakes of merchant ships, are reported in radio weather messages and log books transmitted to the U.S. Fleet Numerical Oceanography

Table 4. Monthly average values of air temperature departures (from long-term monthly station means), resultant wind velocity, and scalar wind speed from Atlantic coastal weather stations for November 1980 - January 1981

	Air temperature departure (°C)	Resultant wind direction and speed (°/m·s ⁻¹)	Av. wind speed (m/s)
Portland, Maine			
Nov 80	-1.3	300/2.3	4.2
Dec 80	-2.4	310/2.3	3.7
Jan 81	-4.3	300/2.1	3.4
Boston, Massachusetts			
Nov 80	-2.2	290/3.7	6.2
Dec 80	-2.4	290/3.3	5.0
Jan 81	-4.3	290/4.4	5.8
Providence, Rhode Island			
Nov 80	-1.3	300/2.8	4.7
Dec 80	-1.7	310/2.9	4.4
Jan 81	-4.5	300/2.8	3.8
New York, NY (JFK Intl. Airport)			
Nov 80	-0.6	300/3.9	6.5
Dec 80	-0.7	320/3.9	6.4
Jan 81	-2.7	310/4.1	6.1
Atlantic City, New Jersey			
Nov 80	-2.6	280/2.1	3.8
Dec 80	-2.2	300/2.3	4.1
Jan 81	-5.5	290/2.6	4.0
Norfolk, Virginia			
Nov 80	-0.9	320/1.4	4.8
Dec 80	0.0	350/2.2	5.3
Jan 81	-4.3	330/1.8	4.4

Table 5. Monthly average sea surface temperature anomalies (°C) from the 1948-1967 means for January 1980 - January 1981 in the northwestern Atlantic Ocean (35°-46°N 60°-76°W)

Date	Number of 1°-squares	Area mean anomaly	Standard deviation 1948-1967
Jan.....	111	+0.20	1.26
Feb.....	117	-0.31	1.23
Mar.....	109	-0.28	1.49
Apr.....	113	+0.12	1.51
May.....	119	+0.56	1.22
Jun.....	121	-0.04	0.91
Jul.....	127	-0.25	0.89
Aug.....	61	-0.47	0.85
Sep.....	103	+0.51	0.89
Oct.....	111	+0.03	0.95
Nov.....	112	-0.64	0.90
Dec.....	108	-0.59	0.91
Jan.....	107	-0.69	1.26

Center (FNO) and the National Climatic Center for processing and archiving. The "real-time" reports of the data base provided by the radio messages are analyzed by FNO and the Pacific Environmental Group of the National Marine Fisheries Service, which is co-located with

FNO. An elementary step in the analysis is the computation of average monthly temperatures and anomalies (from 1948-1967 means) for each 1°×1° square for which enough data have been reported each month. The average SSTs, anomalies, and number of

Figures 22-34. Average sea surface temperature anomalies (°C). Also shown in each one-degree square are average sea surface temperatures (upper number) and the number of observations (lower number).

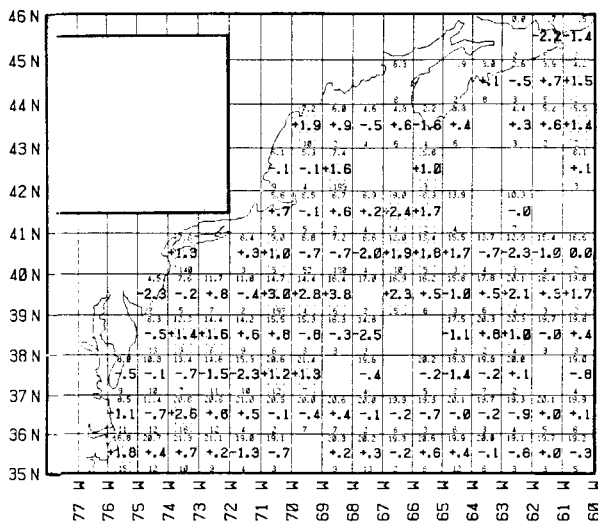


Figure 22. January 1980.

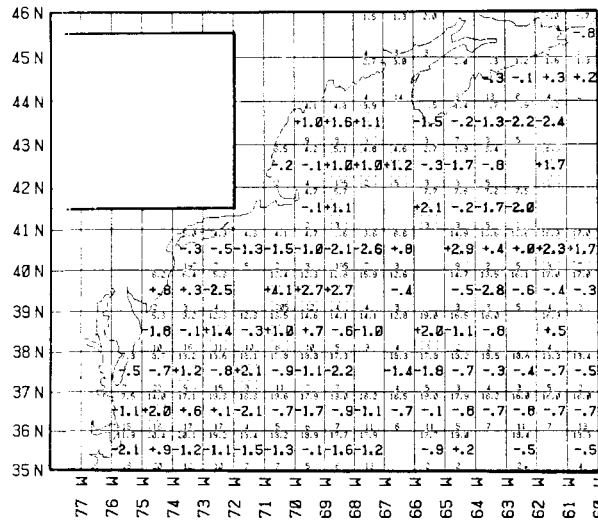


Figure 24. March 1980.

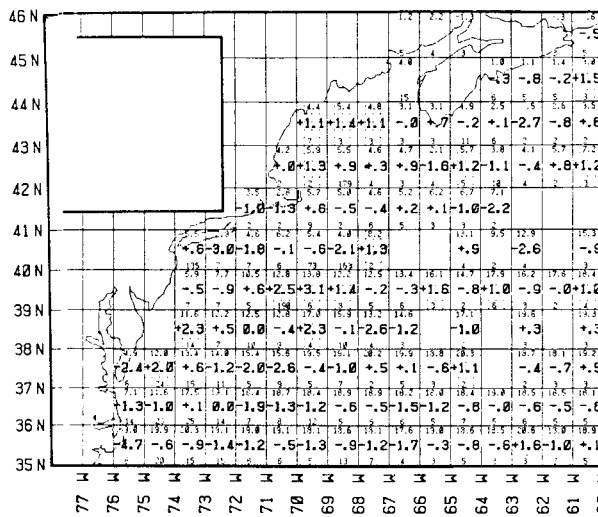


Figure 23. February 1980.

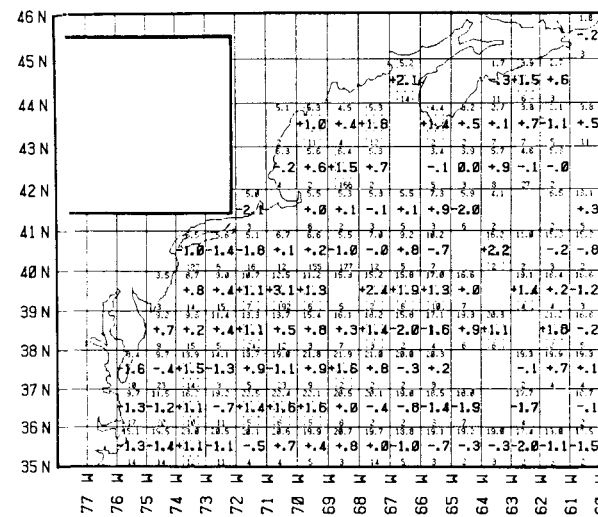


Figure 25. April 1980.

observations are then printed in the $1^{\circ} \times 1^{\circ}$ squares they characterize to produce a map such as the one shown in Figure 22. To facilitate interpretation of the data, anomalies greater than $+1^{\circ}\text{C}$ or less than -1°C are shaded.

Monthly maps of this sort for the northwestern Atlantic for January 1980-January 1981 (Figs. 22-34) show that distributions of SST anomalies were not very

unusual until November, when Georges Bank ($40^{\circ}-42^{\circ}\text{N}$, $66^{\circ}-69^{\circ}\text{W}$) and the nearshore areas of the Middle Atlantic Bight showed strongly negative anomalies, as large as -3.1°C . This unusual cooling was the consequence of strong W-NW winds bringing cold, continental air into the New England and Middle Atlantic states and across coastal waters. Meteorological records from coastal weather stations for November (Table 4) clearly show the

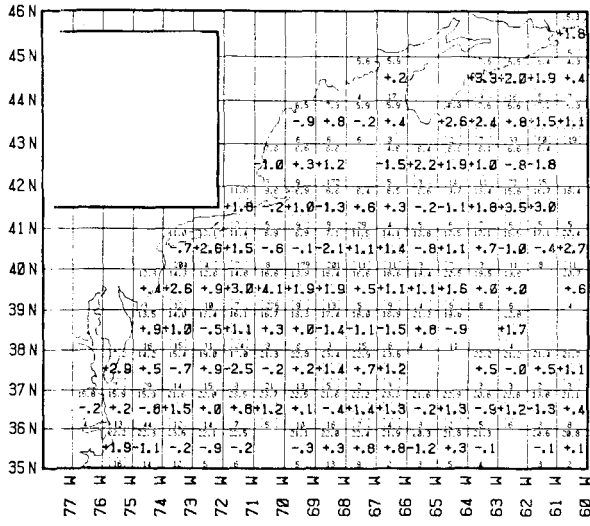


Figure 26. May 1980.

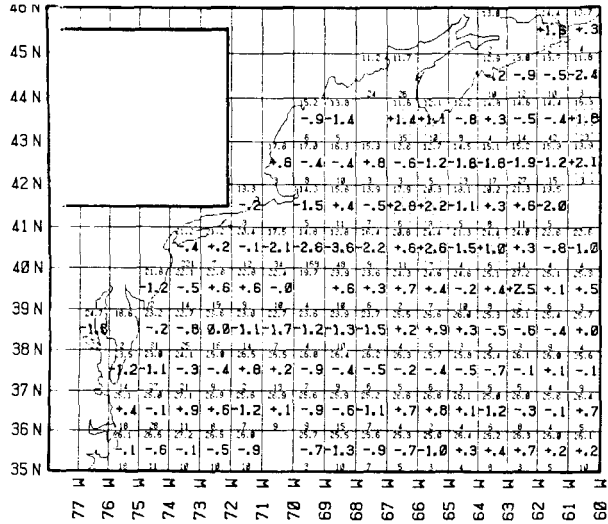


Figure 28. July 1980.

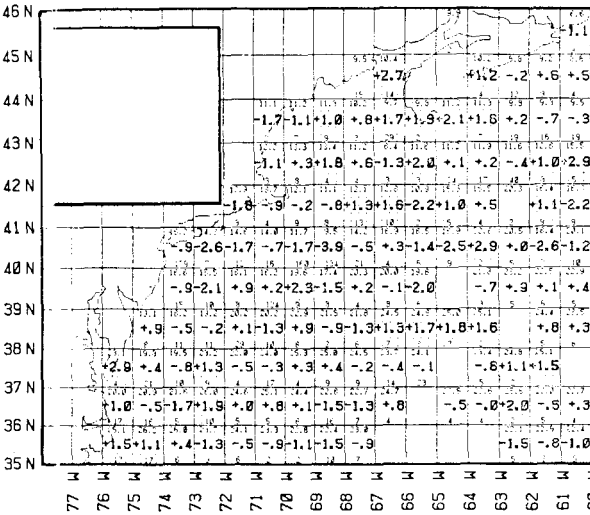


Figure 27. June 1980.

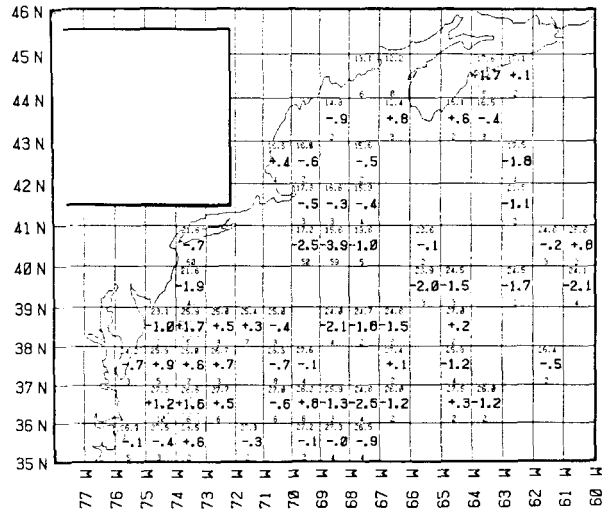


Figure 29. August 1980.

regional impact of the cold, continental air with temperature departures from normal ranging up to -2.6°C in Atlantic City.

The negative anomalies continued in the Georges Bank - Middle Atlantic Bight area during December 1980 and January 1981 as the result of a continuing westerly-northwesterly flow of cold air. January air temperatures were the most anomalous (Table 4) of the

three months, but the negative SST anomalies were not noticeably greater then.

Pooled average SST anomalies for the entire mapped area (Table 5) similarly show the strongest negative anomalies in the November 1980 - January 1981 period. Otherwise the record is nearly featureless except for positive anomalies of 0.56 and 0.50 in May and September.

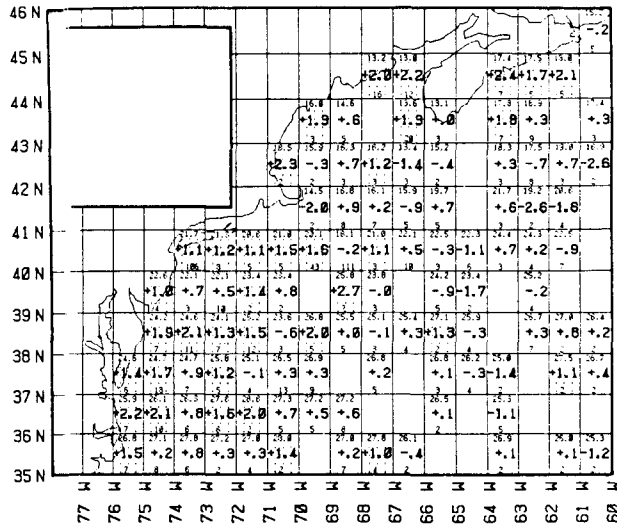


Figure 30. September 1980.

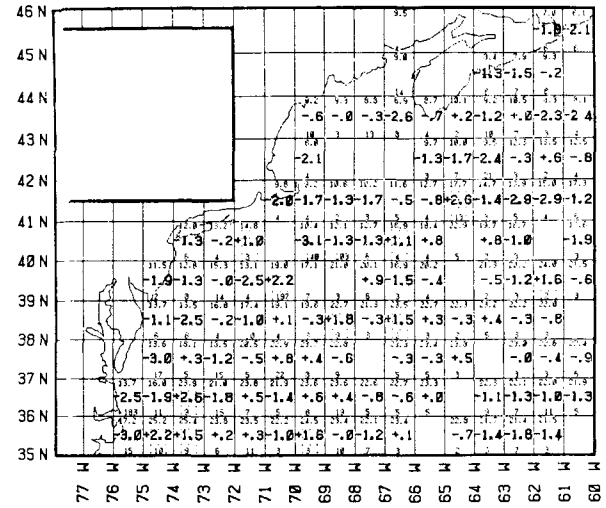


Figure 32. November 1980.

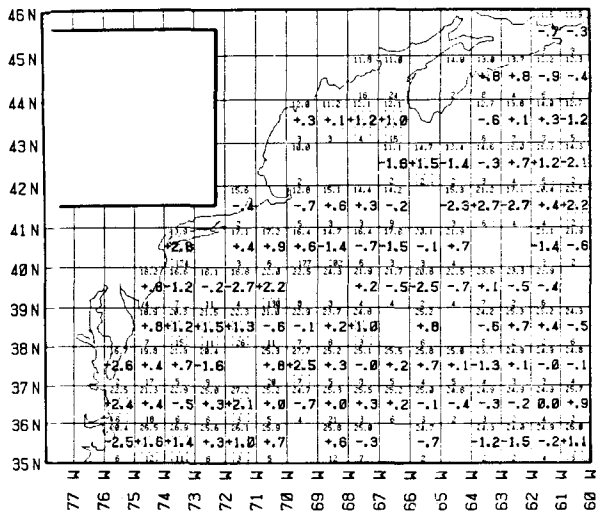


Figure 31. October 1980.

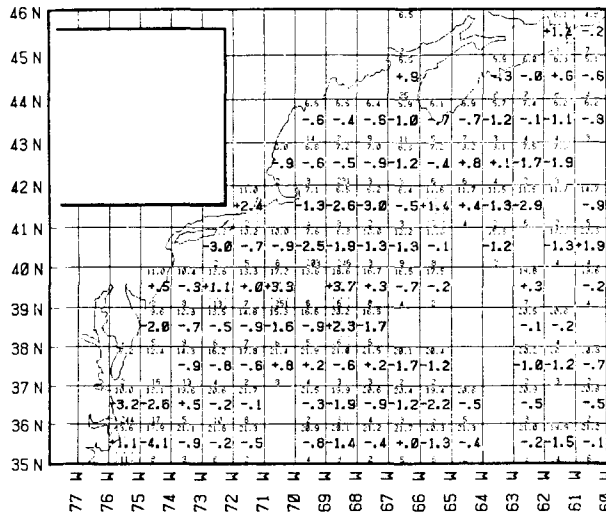


Figure 33. December 1980.