

CRUISE REPORT 86-037

Local Cruise Designation: 86-037 Ice Forecast 1986
Vessel: C.S.S. DAWSON
Dates: November 13 - 23, 1986
Area: Gulf of St. Lawrence
Responsible Agency: Coastal Oceanography Div.
Atlantic Oceanographic Lab.
Bedford Institute of Oceanography

Ship's Master: Captain L. Strum

Senior Scientist: G.L. Bugden

Scientific Personnel:
L. Bellefontaine (Coastal Oc.)
D. Belleveau (Metrology)
T. Foote (Coastal Oc.)
G. Fowler (Metrology)
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J. Whitman (Metrology)
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Purpose:

- a) Obtain temperature - salinity soundings from 35 locations in the Gulf of St. Lawrence for preparation of seasonal ice outlook by the Ice Climatology Branch of the Atmospheric Environment Service and acquire dissolved oxygen and nutrient data from these stations for comparison with previous years.
- b) Deploy satellite transmitting thermistor buoys to monitor the cooling of the water column as freeze-up approaches.
- c) Evaluate problems arising from CTD operation in cold weather.
- d) Deploy bottom mounted doppler current profiler.
- e) Further testing and development of IBM-PC based shipboard doppler current profiler.

Operations and Nature of Data Gathered

A substantial portion of the allotted time was lost to weather and mechanical problems. The survey did not commence until November 15 due to weather conditions in Cabot Strait, and was discontinued again on

November 18, again because of weather. November 19 and 20 were spent alongside at Gaspe, P.Q. awaiting lubricating oil for a stern tube which had developed a serious leak. The survey was again halted late on November 21 as the weather again deteriorated.

In spite of these problems, the majority of the program was accomplished. 26 of the 35 planned stations were occupied using a Guildline digital CTD. Data was logged on magnetic tape using an HP 1000 computer system. A rosette sampler was used to collect water samples for dissolved oxygen and nutrient analysis. One of the rosette bottles was equipped with reversing thermometers for temperature calibration and salinity samples were drawn regularly as an additional check.

All four satellite buoys were deployed in their intended positions although only three of these continued to operate as planned. The fourth was of an obsolete design and this was not unexpected. The buoys deployed at stations 11, 16 and 19 were equipped with 100 m chains and continued to operate. The buoy deployed at station 32, equipped with a 50 m chain, failed shortly after deployment. (See attached track chart.)

A simple insulated box equipped with an electric heater designed to fit over the CTD sensors was tested and was found to perform well in preventing the accumulation of freezing spray and preventing the CTD conductivity cell from freezing on the exposed deck of Dawson. It was suggested that the addition of a canvas cover to enclose the rosette mechanism would completely solve the problems encountered on this and previous cruises when the buildup of ice on the mechanism sometimes prevented proper operation.

The bottom mounted doppler current profiler was not deployed as it had developed problems prior to the cruise. Testing and development of the shipboard system was highly successful, several additional features beyond the original plan being implemented and tested.

The co-operation and skill of the scientific staff, officers and crew of CSS Dawson, under difficult and often trying conditions, resulted in a relatively succesful if not always pleasant cruise.

CTD Stations

<u>Station #</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Depth (m)</u>	<u>Time (GMT)</u>
1	46°55.1'N	60°10.6'W	87	1115 86.11.15
2	47° 4.9'N	60° 1.6'W	293	1252 " " "
3	47°15.0'N	59°51.0'W	455	1448 " " "
4	47°25.4'N	59°35.4'W	470	1656 " " "
5	47°34.7'N	59°19.7'W	250	1920 " " "
6	48° 0.0'N	59°29.9'W	175	2312 " " "
7	48° 9.1'N	60° 6.5'W	460	0231 86.11.16
8	48°21.5'N	60°39.0'W	430	0551 " " "
9	48°35.9'N	61°11.1'W	395	0903 " " "
10	48°55.2'N	61°40.4'W	135	1215 " " "
11*	49° 6.8'N	59°59.1'W	255	1840 " " "
12	49°20.0'N	58°29.5'W	61	2357 " " "
13	49°34.5'N	58°51.0'W	151	0202 86.11.17
14	49°50.1'N	59°25.2'W	250	0458 " " "
15	50° 5.0'N	59°54.9'W	120	0751 " " "
16*	49°45.1'N	61°48.8'W	255	1429 " " "
17	50° 2.3'N	64° 3.9'W	113	2311 " " "
18	50° 2.1'N	66°18.5'W	125	0727 86.11.18
19*	49°48.1'N	66°20.5'W	300	0924 " " "
20	49°34.2'N	66°18.6'W	330	1150 " " "
21	49°24.5'N	66°18.8'W	328	1338 " " "
22	49°14.3'N	66°19.2'W	214	1535 " " "
24	49°11.7'N	64°48.7'W	113	2114 " " "
25	49°18.0'N	64°43.5'W	370	2230 " " "
30	48°56.5'N	63° 4.1'W	380	1735 86.11.21
32*	48°19.5'N	63° 9.5'W	55	2124 " " "

*Satellite Buoy Deployed

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ACTUAL
TRACK
CHART

