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Salinity of waters in the Davis Strait, Labrador
and Newfoundland areas in 1973-1974

by

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Abstract

Data on the salinity of waters of the ICNAF area collected during five cruises of the PINRO research vessels in the period from June 1973 to August 1974 are given in this paper. Eight salinity charts give an idea of the salinity distribution on the surface and near the bottom; mean salinity values of the Labrador Current, its norms and anomalies on standard sections 8-A, 6-A, 4-A and 3-A for all observations are given.

In the spring 1974 small negative anomalies of salinity predominated on these sections in the 0-200 m layer.

Data on the water salinity of the ICNAF area, collected by the PINRO research vessels from June 1973 to August 1974 are given in this paper.

Eight charts of the salinity distribution on the surface and in the near-bottom layer of the areas from 1B to 4V for different periods were compiled (Fig.1-5).

As it is evident from Fig.1, the greatest salinity on the surface of the Davis Strait in September-October 1973 was in the central part of the strait, decreasing towards the coasts of Canada and Greenland. This regularity was still further pronounced in the near-bottom layers (Fig.1B).

A patch of an increased salinity (Fig.1A) on the surface

in the Store Hellefiske Banke area (ICNAF, Division 1B) was formed as the result of an increased salinity water transport to that area from the central part of the strait by the western outer edges of the water cycle. The water cycle was in the middle of the strait, its center being at the latitude of 65° (Kudlo, B.P., Borovkov, V.A., 1975).

Three series of salinity charts on the surface and near the bottom are compiled for the Newfoundland area (Fig. 2-5). A correlation between the salinity fields and the geostrophic circulation field is indicative of a fairly close relationship between them.

Mean salinity values in the 0-200 m layer on standard sections crossing the current were calculated as numerical indices of the Labrador Current regime. The results of calculations for all observations on the sections from June 1973 to August 1974 are given in the table. Norms and anomalies of salinity at the date of observations on the section were defined according to the long-term mean curves of the annual values of salinity on the given sections, that were reported by us in the ICNAF publications in 1971-1973.

The data presented in the table show that in the spring 1974, as in the previous spring, small negative salinity anomalies predominated throughout the Labrador Current from the Hamilton Bank (Division 2j) to the south-eastern slope of the Newfoundland Grand Bank (Division 3N) in the 0-200 m layer. An analogous phenomenon was also the case in that area in spring 1972 (Kudlo, B.P., 1975).

References

- Kudlo, B.P. and Borovkov, V.A. 1975. Circulation of waters in the ICNAF area in 1973-1974.
- Kudlo, B.P. 1975. Salinity of the waters in the area of Labrador and Newfoundland in 1971-1972. ICNAF research Bulletin, No. 11 (in press).

Table 1.

Mean salinity of the Labrador Current in the 0-200 m layer,
its norms and anomalies on some standard sections in 1973-1974

Section Sector Division	Vessel Cruise	Date of observations	Salinity (‰)		
			obs- er- vations	norm	anoma- ly
8-A,(B)	"Protsion" II cruise	22-24 June 1973	33,41	33,88	-0,47
	"Artemida" 6 cruise	01-02 November 1973	33,43	33,56	-0,13
Division 2J	"Gemma" 9 cruise	04-06 July 1974	33,61	33,53	+0,08
	"Perseus III" I2 cruise	19-20 August 1974	33,36	33,40	-0,04
6-A,(G)	"Protsion" II cruise	26-27 April 1973	33,74	33,82	-0,08
	II cruise	24-25 May 1973	34,04	33,76	+0,28
	"Perseus III" II cruise	12-13 July 1973	33,59	34,00	-0,41
Division 3L	"Gemma" 9 cruise	02-03 May 1974	33,63	33,80	-0,17
	"Gemma" 9 cruise	26-27 May 1974	33,75	33,76	-0,01
	"Perseus III" I2 cruise	24-25 July 1974	33,83	33,94	-0,11
4-A,(6-12 st)	"Protsion" II cruise	18-20 May 1973	33,30	34,03	-0,73
	"Gemma" 9 cruise	26-28 April 1974	33,72	34,08	-0,36
Division 3N	"Gemma" 9 cruise	21-22 May 1974	33,69	34,02	-0,33
	"Protsion" II cruise	15-16 May 1973	33,72	33,70	+0,02
3-A,(6-11 st)	"Perseus III" II cruise	11-12 July 1973	33,61	34,01	-0,40
	"Gemma" 9 cruise	24-25 April 1974	33,36	33,84	-0,48
Division 3N	"Gemma" 9 cruise	17-18 May 1974	33,46	33,70	-0,24

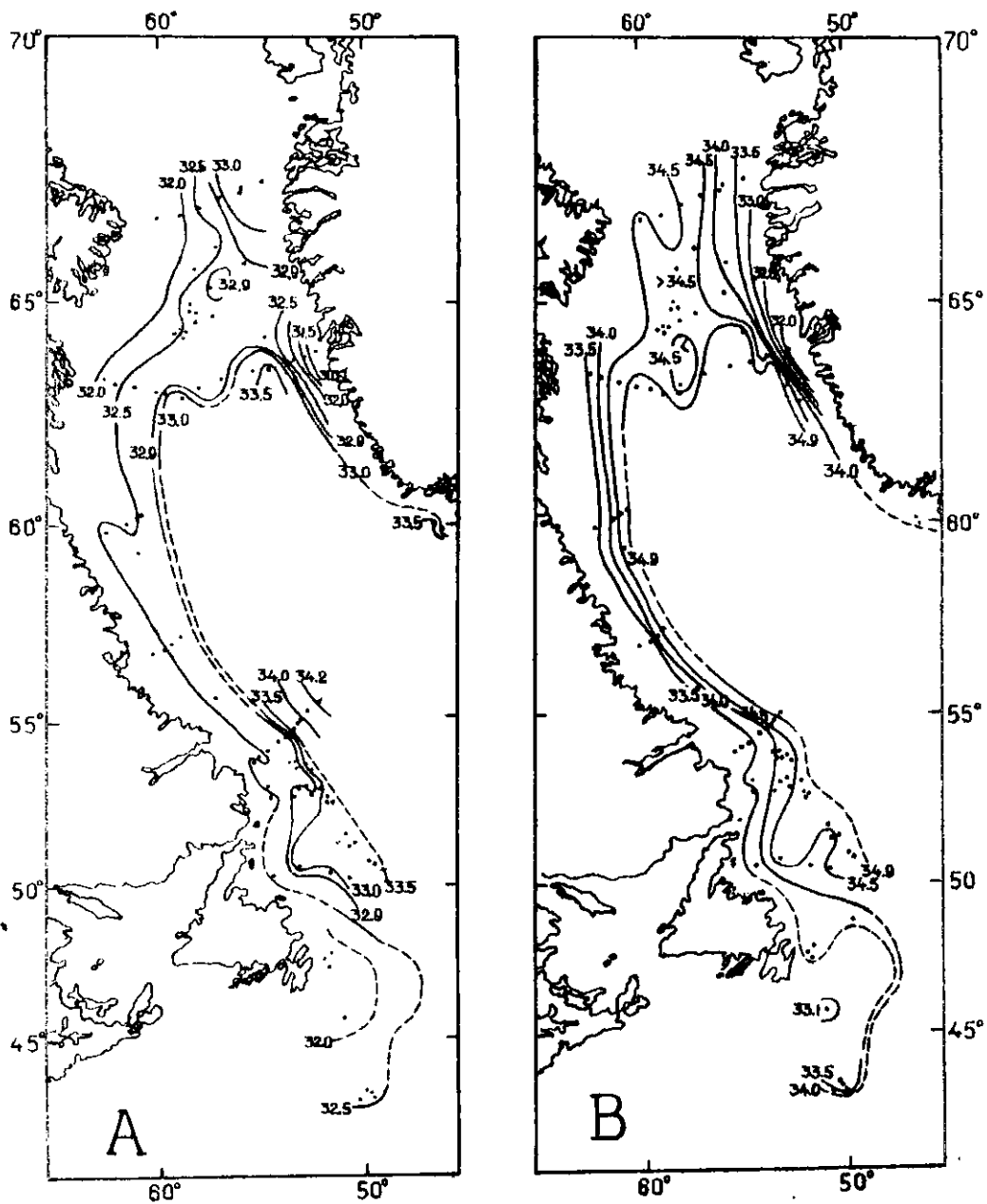


Fig. 1. Salinity distribution on the surface (A) and near the bottom (B) in the Davis Strait, Labrador and Newfoundland areas in September-November 1973 according to data obtained in the 6th cruise of R/V *Artemida*.

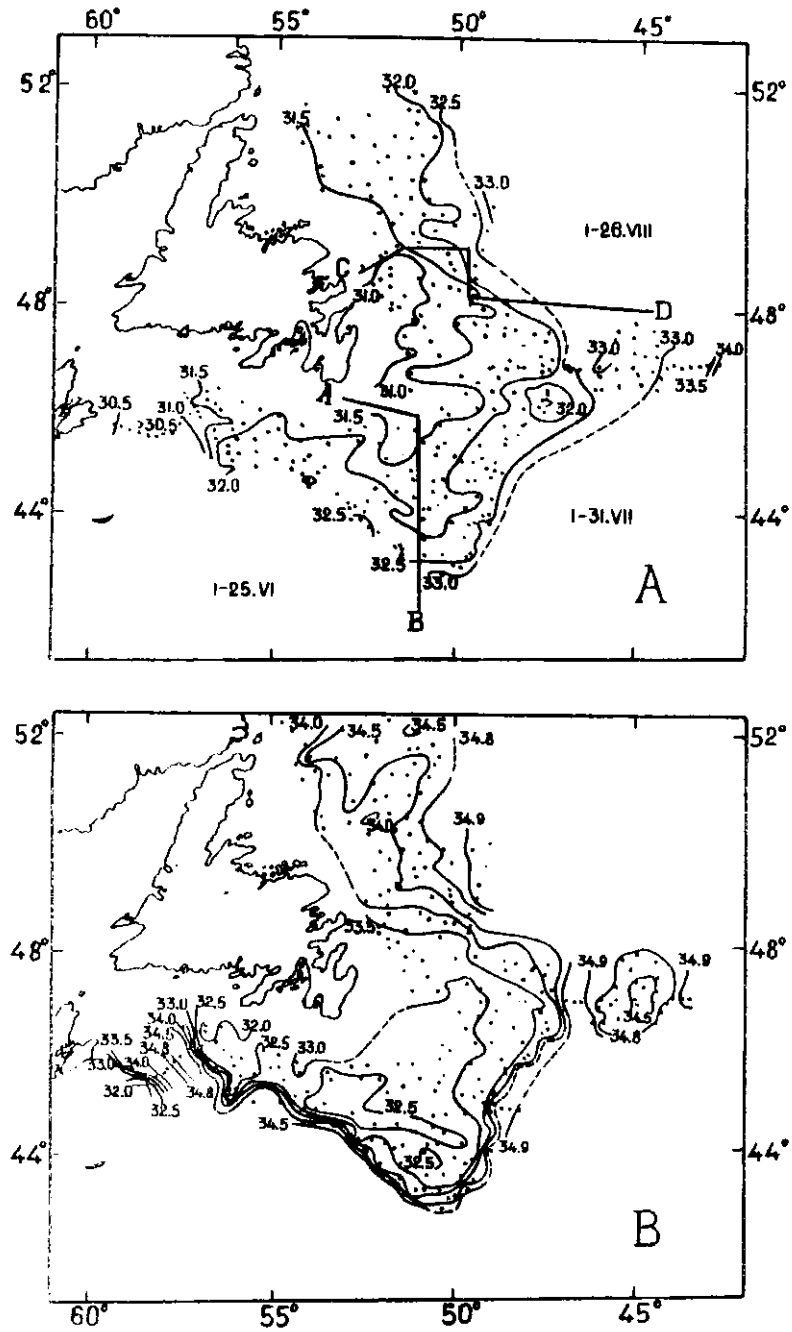


FIG. 2. Salinity distribution on the surface (A) and near the bottom (B) in the Newfoundland area in June-August 1973 according to data obtained in the 11th cruise of R/V *Perseus III*.

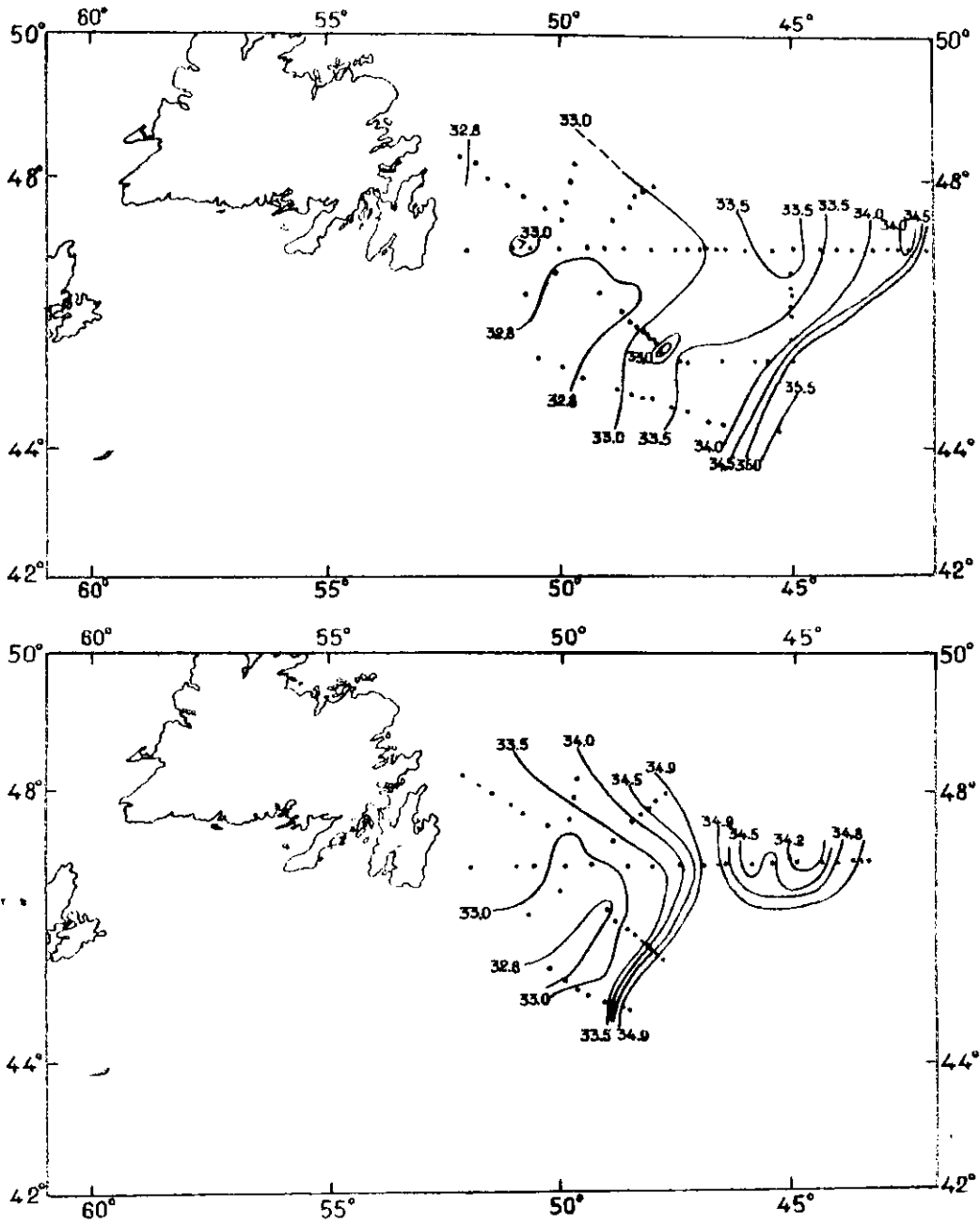


Fig. 3. Salinity distribution on the surface (A) and near the bottom (B) in the Newfoundland area on 21 April-9 May 1974 according to data obtained in the 9th cruise of R/V Gemma (1st survey).

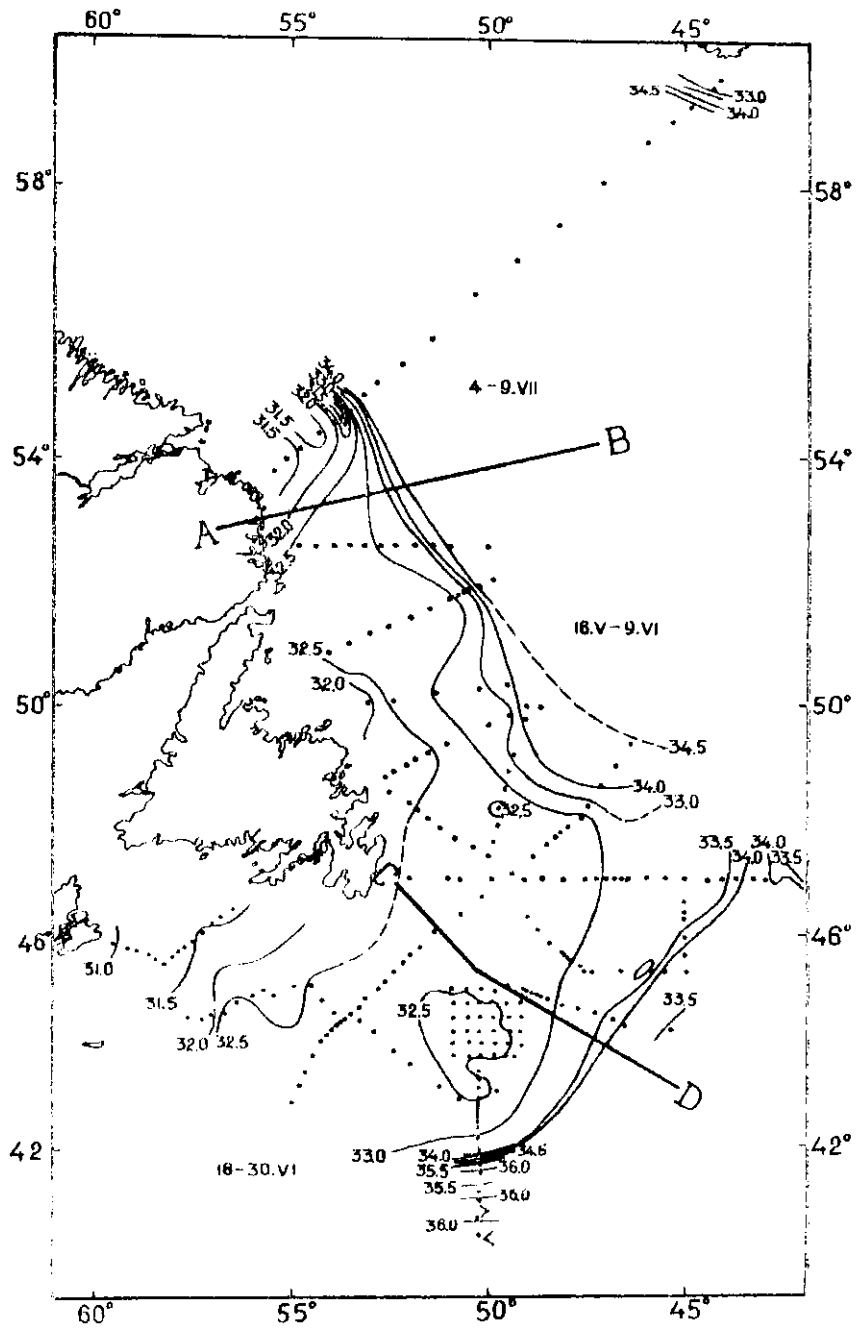


Fig. 4. Salinity distribution on the surface in the south Labrador and Newfoundland areas in May-June 1974 according to data obtained in the 9th cruise of R/V Gemma (2nd survey).

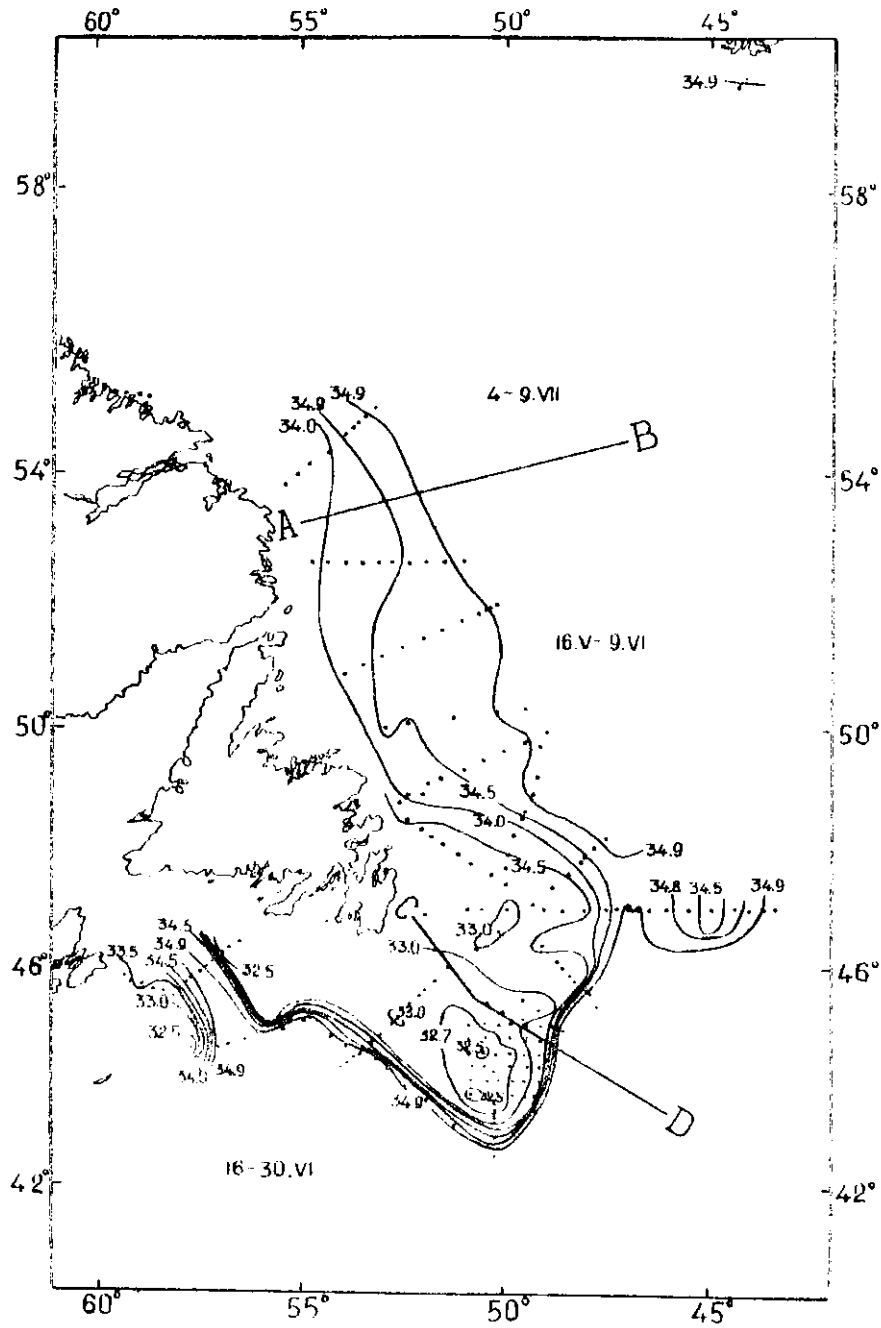


Fig. 5 Salinity distribution near the bottom in the south Labrador and Newfoundland areas in May-July 1974 according to data of the 9th cruise of R/V *Genma* (2nd survey).