WHOI-82-10

HYDROGRAPHIC STATION DATA OBTAINED IN THE
EAST CHINA SEA, JUNE, 1980

by

R. Limeburner
and
R. C. Beardsley

WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts 02543

March 1982

TECHNICAL REPORT

*Prepared for the National Atmospheric and Oceanic Administration
under Cooperative Agreement NA81AA-H-00008 and for the National
Science Foundation under Grant OCE-80-14941.*

*Reproduction in whole or in part is permitted for any purpose of
the United States Government. This report should be cited as:
Woods Hole Oceanog. Inst. Tech. Rept. WHOI-82-10.*

Approved for Distribution:

N.P. Fofonoff
N.P. Fofonoff, Chairman
Department of Physical Oceanography

TABLE OF CONTENTS

	<u>Page No.</u>
List of Figures	3
Abstract	9
I. Introduction	10
II. Instrumentation	
A. CTD	11
B. Transmissometer	11
C. Calibration Samples	11
B. Navigation.	12
III. Data Analysis.	12
IV. Error Analysis	13
V. Data Presentation.	14
VI. Acknowledgements	15
VII. Hydrographic Data.	16

<u>Figure No.</u>	<u>List of Figures</u>	<u>Page No.</u>
1.	<u>Oceanographer</u> Cruise Track	16
2.	<u>Oceanographer</u> Section Identification Scheme	17
3.	Survey I Surface Temperature	18
4.	Survey I Temperature at 10 m	19
5.	Survey I Temperature at 20 m	20
6.	Survey I Temperature at 30 m	21
7.	Survey I Surface Salinity	22
8.	Survey I Salinity at 10 m	23
9.	Survey I Salinity at 20 m	24
10.	Survey I Salinity at 30 m	25
11.	Survey I Surface σ_t	26
12.	Survey I σ_t at 10 m	27
13.	Survey I σ_t at 20 m	28
14.	Survey I σ_t at 30 m	29
15.	Survey I Temperature Section A-0	30
16.	Survey I Salinity Section A-0	31
17.	Survey I σ_t Section A-0	32
18.	Survey I Temperature Section Q-B	33
19.	Survey I Salinity Section Q-B	34
20.	Survey I σ_t Section Q-B	35
21.	Survey I Temperature Section S-L	36
22.	Survey I Salinity Section S-L	37
23.	Survey I σ_t Section S-L	38
24.	Survey I Transmission Section S-L	39

<u>Figure No.</u>		<u>Page No.</u>
25.	Survey I Temperature Section P-C	40
26.	Survey I Salinity Section P-C	41
27.	Survey I σ_t Section P-C	42
28.	Survey I Temperature Section G-D	43
29.	Survey I Salinity Section G-D	44
30.	Survey I σ_t Section G-D	45
31.	Survey I Temperature Section R-M	46
32.	Survey I Salinity Section R-M	47
33.	Survey I σ_t Section R-M	48
34.	Survey I Transmission Section R-M	49
35.	Survey I Temperature Section G-P	50
36.	Survey I Salinity Section G-P	51
37.	Survey I σ_t Section G-P	52
38.	Survey I Transmission Section G-P	53
39.	Survey I Temperature Section S-A	54
40.	Survey I Salinity Section S-A	55
41.	Survey I σ_t Section S-A	56
42.	Survey I Transmission Section S-A	57
43.	Survey I Temperature Section B-N	58
44.	Survey I Salinity Section B-N	59
45.	Survey I σ_t Section B-N	60
46.	Survey I T/S Diagram	61
47.	Survey II Surface Temperature	62
48.	Survey II Temperature at 10 m.	63
49.	Survey II Temperature at 20 m.	64
50.	Survey II Temperature at 30 m.	65

Figure No.

Page No.

51.	Survey II Surface Salinity	66
52.	Survey II Salinity at 10 m	67
53.	Survey II Salinity at 20 m	68
54.	Survey II Salinity at 30 m	69
55.	Survey II Surface σ_t	70
56.	Survey II σ_t at 10 m	71
57.	Survey II σ_t at 20 m	72
58.	Survey II σ_t at 30 m	73
59.	Survey II Temperature Section A-0	74
60.	Survey II Salinity Section A-0	75
61.	Survey II σ_t Section A-0	76
62.	Survey II Transmission Section A-0	77
63.	Survey II Temperature Section Q-B	78
64.	Survey II Salinity Section Q-B	79
65.	Survey II σ_t Section Q-B	80
66.	Survey II Transmission Section Q-B	81
67.	Survey II Temperature Section S-L	82
68.	Survey II Salinity Section S-L	83
69.	Survey II σ_t Section S-L	84
70.	Survey II Transmission Section S-L	85
71.	Survey II Temperature Section P-C	86
72.	Survey II Salinity Section P-C	87
73.	Survey II σ_t Section P-C	88
74.	Survey II Transmission Section P-C	89

<u>Figure No.</u>		<u>Page No.</u>
75.	Survey II Temperature Section G-D	90
76.	Survey II Salinity Section G-D	91
77.	Survey II σ_t Section G-D	92
78.	Survey II Transmission Section G-D	93
79.	Survey II Temperature Section R-M	94
80.	Survey II Salinity Section R-M	95
81.	Survey II σ_t Section R-M	96
82.	Survey II Transmission Section R-M	97
83.	Survey II Temperature Section G-P	98
84.	Survey II Salinity Section G-P	99
85.	Survey II σ_t Section G-P	100
86.	Survey II Transmission Section G-P	101
87.	Survey II Temperature Section S-A	102
88.	Survey II Salinity Section S-A	103
89.	Survey II σ_t Section S-A	104
90.	Survey II Transmission Section S-A	105
91.	Survey II Temperature Section B-N	106
92.	Survey II Salinity Section B-N	107
93.	Survey II σ_t Section B-N	108
94.	Survey II Transmission Section B-N	109
95.	Survey II T/S Diagram	110
96.	Survey III Surface Temperature	111
97.	Survey III Temperature at 10 m	112
98.	Survey III Temperature at 20 m	113
99.	Survey III Temperature at 30 m	114

<u>Figure No.</u>		<u>Page No.</u>
100.	Survey III Surface Salinity	115
101.	Survey III Salinity at 10 m	116
102.	Survey III Salinity at 20 m	117
103.	Survey III Salinity at 30 m	118
104.	Survey III Surface σ_t	119
105.	Survey III σ_t at 10 m	120
106.	Survey III σ_t at 20 m	121
107.	Survey III σ_t at 30 m	122
108.	Survey III Temperature Section A-0	123
109.	Survey III Salinity Section A-0	124
110.	Survey III σ_t Section A-0	125
111.	Survey III Transmission Section A-0	126
112.	Survey III Temperature Section Q-B	127
113.	Survey III Salinity Section Q-B	128
114.	Survey III σ_t Section Q-B	129
115.	Survey III Transmission Section Q-B	130
116.	Survey III Temperature Section S-L	131
117.	Survey III Salinity Section S-L	132
118.	Survey III σ_t Section S-L	133
119.	Survey III Transmission Section S-L	134
120.	Survey III Temperature Section P-C	135
121.	Survey III Salinity Section P-C	136
122.	Survey III σ_t Section P-C	137
123.	Survey III Transmission Section P-C	138

<u>Figure No.</u>		<u>Page No.</u>
124.	Survey III Temperature Section G-D	139
125.	Survey III Salinity Section G-D	140
126.	Survey III σ_t Section G-D	141
127.	Survey III Transmission Section G-D	142
128.	Survey III Temperature Section R-M	143
129.	Survey III Salinity Section R-M	144
130.	Survey III σ_t Section R-M	145
131.	Survey III Transmission Section R-M	146
132.	Survey III Temperature Section G-P	147
133.	Survey III Salinity Section G-P	148
134.	Survey III σ_t Section G-P	149
135.	Survey III Transmission Section G-P	150
136.	Survey III Temperature Section S-A	151
137.	Survey III Salinity Section S-A	152
138.	Survey III σ_t Section S-A	153
139.	Survey III Transmission Section S-A	154
140.	Survey III Temperature Section B-N	155
141.	Survey III Salinity Section B-N	156
142.	Survey III σ_t Section B-N	157
143.	Survey III Transmission Section B-N	158
144.	Survey III T/S Diagram	159

Abstract

Three surveys were made during June, 1980 on the R/V Oceanographer to measure the regional hydrographic structure in the East China Sea near the mouth of the Chang Jiang (Yangtze) River. The objective of the hydrographic program was to document the spatial and temporal structure of the Chang Jiang plume over the continental shelf and characterize the river's influence on the shelf water masses. A summary of the hydrographic observations made during Cruise RP-05-0C-80 on the R/V Oceanographer is presented in graphic form.

I. INTRODUCTION

This report presents preliminary results of three hydrographic surveys made in the East China Sea near the Chang Jiang (Yangtze) River in June, 1980 on the R/V Oceanographer. The Yangtze River is the third largest river in the world in terms of water discharge and the maximum discharge on average occurs in July and August. In June, 1980, the first field experiment of a cooperative research program took place in the East China Sea involving U.S. and Chinese scientists from many institutions including specialists in marine geology, biological oceanography, marine geochemistry, and physical oceanography. The overall objective of this joint U.S. - P.R.C. program is to develop an understanding of the discharge of fresh water and sediment from the Yangtze River, and to determine its influence on the East China Sea sedimentary regimes. As part of this program, a hydrographic component was designed to measure the spatial and temporal structure of the Yangtze River plume from the mouth of the estuary out onto the shelf and characterize the influence of this plume on the shelf water masses. The 1980 field work involved the NOAA ship Oceanographer and two Chinese research ships, the R/V Xiang Yang Hong No. 9 which, like the Oceanographer, worked over the inner shelf adjacent to the Yangtze mouth, and the R/V Shugang No. 6, a smaller coastal vessel which worked within the mouth of the Yangtze estuary. The Oceanographer conducted three large-scale hydrographic surveys over the mid- and outer shelf, while the two Chinese vessels conducted smaller surveys more limited in both space and time over the inner shelf and river mouth. We present here, in graphical form, a preliminary analysis of the hydro-

graphic observations made during the three surveys. This includes all of the hydrographic data collected by the Oceanographer and the Chinese hydrographic data taken during the first survey.

II. INSTRUMENTATION

A. CTD

A Plessy Model 9040 CTD fish (No. 5656) with a Plessy Model 8400 digital logger was used as the primary profiling instrument aboard the R/V Oceanographer. Due to malfunction of the 8400 data logger, the data used in this report was recorded on the ship's PDP-11 computer and later processed at Woods Hole. On-board calibration checks were made when possible by plotting the temperature and salinity differences between CTD values and Niskin bottle samples. No changes in the CTD calibrations were detected.

B. Transmissometer

A Montedoro Whitney Model TMV-3 transmissometer was used with each CTD cast after Station 19. The estimated accuracy is 2 percent of full scale which is 100 percent.

C. Calibration Samples

Salinity samples were obtained during each CTD profile at the surface and at depth for calibration using standard Niskin bottles. The procedure was to attach the Niskin bottle 4 m above the CTD fish and lower the instrument to within 5 m of the bottom for a continuous down profile. The fish was then raised until the Niskin bottle was located in a zone of minimal salinity gradient as estimated from the analog temperature and

conductivity down traces. The winch was stopped and three to five minutes were allowed for the reversing thermometers to equilibrate before the bottle was tripped. The fish was then raised 4 m, the three instrument output frequencies measured and logged, and then the fish was brought back to the surface as the up profile was recorded. The Niskin bottle temperature represents the average of two protected thermometer measurements and has an estimated accuracy of $\pm .005^{\circ}\text{C}$.

The salinity of the surface and deep water samples was determined on-board the R/V Oceanographer using a Guildline Auto-Sal Salinometer with a precision of less than $\pm .001^{\circ}/\text{‰}$.

D. Navigation

The ship's Loran-C instruments provided nominal position accuracy due to the remoteness of the East China Sea to the Loran-C network. Satellite navigation and dead reckoning helped provide adequate position estimates. The estimated position accuracy was ± 3 nautical miles.

III. DATA ANALYSIS

The raw data tapes were first edited for proper header information and file structure using the WHOI computer program "TIDE". A second test of the structural integrity of the data files was made with program "PLSSY" (written by W. Sass) which transcribes the raw data into CTD format and detects any bad scans which are located in the data files. The data was then processed with program "AAA", a multi-level general CTD processing program written by J. Vermersch. This program can be used to (1) apply user-specified calibration constants, (2) correct for sensor time lag, (3) compute salinity, σ_t and other derived variables, (4) edit up to

four variables via first-difference or acceptable range method, and (5) sort the data by pressure to provide a uniform pressure series. The linear corrections determined from the salinity and temperature calibration measurements were then applied to the instrument conductivity and temperature data. (The calibration results are discussed in the next section and the mean offsets used to correct the CTD data are listed in Table 1.) A time lag of 2.5 scans (.625 sec) was used on all station data. Profiles of data associated only with monotonically increasing pressure were created and plotted to indicate the initial data quality of each station. The monotonically increasing pressure profiles indicated "spiking" of the salinity data in areas of strong temperature gradients due to the different time constants associated with the conductivity and temperature sensors of the fish. The spiking effects were minimized by the choice of time-lag given.

IV. ERROR ANALYSIS

The WHOI Plessy CTD fish (Number 5656) was calibrated during the cruise in the following manner. The rosette sampler was used to take in situ temperature and water samples for salinity analysis on-board using a Guildline Auto-Sal salinometer. Only the samples taken at the bottom of the cast were used for calibration. The CTD temperature values were compared with the reversing thermometer values to obtain the correction

$$T_{\text{true}} = T_{\text{CTD}} + (.040 \pm .016)^{\circ}\text{C}.$$

Then the CTD conductivity values were compared with the conductivity values computed from the thermometer temperatures and AutoSal salinities to

obtain the correction

$$C_{\text{true}} = C_{\text{CTD}} - (.020 \pm .014) .$$

Table 1 summarizes the mean offset and standard deviation used in correcting the temperature and conductivity data.

Table 1

	Date	Station Number	Average Offset	Standard Deviation	No. of Samples
SURVEY I	June 10-13	16-34			
Temperature (°C)			.045	.020	20
Conductivity (mmho/cm)			-.020	.014	20
SURVEY II	June 18-20	35-57			
Temperature (°C)			.045	.023	33
Conductivity (mmho/cm)			+.009	.019	33
SURVEY III	June 26-27	85-104			
Temperature (°C)			+.031	.006	9
Conductivity (mmho/cm)			-.004	.018	10

We note that the error estimates are based on data taken in minimum gradient layers and significantly larger errors will likely occur in regions of sharp temperature and/or salinity gradients. However, salinity spiking is reduced by the smoothing associated with the 2 decibar pressure sorting.

V. HYDROGRAPHIC DATA PRESENTATION

The hydrographic data taken on the three surveys are presented here in three different formats - vertical and horizontal sections, and T/S dia-

grams. The horizontal and vertical cross-sections are drawn with contour intervals of 1°C , $1^{\circ}/\text{‰}$, $1 \sigma_t$ and every 10 percent light transmission. Each survey repeats the same station locations as shown in Figure 1, and is presented separately in this report. The horizontal surface maps for the first survey also show the surface data collected by the two Chinese research vessels working in the near-shore estuarine region of the Yangtze. The vertical sections are common to all surveys and the same letter identification scheme as shown in Figure 2 is used for each survey. T/S diagrams are also presented for each survey. Different symbols are used to indicate the beginning of each cast and the T/S values at standard depths of 10 m, 20 m, 30 m, etc. The horizontal plan view sections are presented for each survey at standard depths of 0 m, 10 m, 20 m, 30 m.

Acknowledgements

Cruise RP-05-OC-80 of the R/V Oceanographer was supported by the National Atmospheric and Oceanic Administration under Cooperative Agreement No. NA81AA-H-00008. The authors were also supported under NSF Grant No. OCE-80-14941. Dr. John Milliman was Chief Scientist on the multidisciplinary cruise which involved acoustic profiling of the sea floor and sediments, as well as the hydrographic program. The work was a cooperative effort between scientists from the People's Republic of China and the United States. The helpfulness of the officers and crew of the R/V Oceanographer contributed significantly to the success of the cruise. We are especially indebted to the survey technicians on the R/V Oceanographer, Chief Tony Mandick, Mike Bates, Gary Zwerfel, Tom O'Callahan, Gary Nelson, Ed Enos and Steve Mastro.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22

Figure 23

Figure 24

Figure 25

Figure 26

Figure 27

Figure 28

Figure 29

Figure 30

Figure 31

Figure 32

Figure 33

Figure 34

Figure 35

Figure 36

Figure 37

Figure 38

Figure 39

Figure 40

Figure 41

Figure 42

Figure 43

Figure 44

Figure 45

ECS014T2.5 3.0 26.0
 ECS016T2.5 3.0 40.0
 ECS018T2.5 3.0 46.0
 ECS020T2.5 2.0 35.0
 ECS021T2.5 3.0 33.0
 ECS022T2.5 3.0 38.0
 ECS023T2.5 3.0 36.0
 ECS024T2.5 2.0 36.0
 ECS025T2.5 3.0 40.0
 ECS026T2.5 2.0 57.0
 ECS028T2.5 2.0 54.0
 ECS030T2.5 2.0 48.0
 ECS031T2.5 2.0 55.0
 ECS032T2.5 2.0 62.0

Figure 46

Figure 47

Figure 48

Figure 49

Figure 50

Figure 51

Figure 52

Figure 53

Figure 54

Figure 55

Figure 56

Figure 57

Figure 58

Figure 59

Figure 60

Figure 61

Figure 62

Figure 63

Figure 64

Figure 65

Figure 66

Figure 67

Figure 68

SURVEY II
EAST CHINA SEA
JUNE 1980
SIGMA - t

Figure 69

Figure 70

Figure 71

Figure 72

Figure 73

Figure 74

Figure 75

Figure 76

Figure 77

Figure 78

Figure 79

Figure 80

Figure 81

Figure 82

Figure 83

Figure 84

Figure 85

Figure 86

Figure 87

Figure 88

Figure 89

Figure 90

Figure 91

Figure 92

Figure 93

Figure 94

ECS038T2.5 □ 1.0 43.0
 ECS040T2.5 ○ 3.0 39.0
 ECS041T2.5 △ 2.0 39.0
 ECS042T2.5 + 2.0 26.0
 ECS043T2.5 × 1.0 36.0
 ECS044T2.5 ◇ 2.0 28.0
 ECS045T2.5 † 1.0 37.0
 ECS046T2.5 × 2.0 41.0
 ECS047T2.5 Z 2.0 36.0
 ECS050T2.5 Y 3.0 60.0
 ECS051T2.5 † 3.0 55.0
 ECS052T2.5 * 2.0 47.0
 ECS053T2.5 † 2.0 44.0
 ECS054T2.5 † 2.0 49.0
 ECS056T2.5 † 3.0 29.0
 ECS057T2.5 + 2.0 35.0
 ECS058T2.5 + 1.0 38.0

Figure 95

Figure 96

Figure 97

Figure 98

Figure 99

Figure 100

Figure 101

Figure 102

Figure 103

Figure 104

Figure 105

Figure 106

Figure 107

Figure 108

Figure 109

Figure 110

Figure 111

Figure 112

Figure 113

Figure 114

Figure 115

Figure 116

Figure 117

Figure 118

Figure 119

Figure 120

Figure 121

Figure 122

Figure 123

Figure 124

Figure 125

Figure 126

Figure 127

Figure 128

Figure 129

Figure 130

Figure 132

Figure 133

Figure 134

Figure 135

Figure 136

Figure 137

Figure 138

Figure 139

Figure 140

Figure 141

Figure 142

Figure 143

ECS085T2.5	□	3.0	30.0
ECS086T2.5	○	2.0	33.0
ECS087T2.5	△	0.0	45.0
ECS088T2.5	+	2.0	47.0
ECS089T2.5	x	2.0	45.0
ECS090T2.5	◇	0.0	34.0
ECS091T2.5	⋈	2.0	35.0
ECS092T2.5	x	2.0	38.0
ECS093T2.5	z	2.0	36.0
ECS094T2.5	y	0.0	36.0
ECS095T2.5	⋈	1.0	39.0
ECS096T2.5	*	2.0	54.0
ECS097T2.5	z	0.0	45.0
ECS098T2.5	-	1.0	44.0
ECS099T2.5	☆	2.0	37.0
ECS100T2.5	+	2.0	58.0
ECS101T2.5	+	2.0	33.0
ECS102T2.5	+	1.0	36.0
ECS103T2.5	+	0.0	36.0
ECS104T2.5	+	2.0	37.0

Figure 144

REPORT DOCUMENTATION PAGE		1. REPORT NO. WHOI-82-10	2.	3. Recipient's Accession No.	
4. Title and Subtitle HYDROGRAPHIC STATION DATA OBTAINED IN THE EAST CHINA SEA, JUNE, 1980				5. Report Date March 1982	
				6.	
7. Author(s) R. Limeburner and R.C. Beardsley				8. Performing Organization Rept. No.	
9. Performing Organization Name and Address Woods Hole Oceanographic Institution Woods Hole, Massachusetts 02543				10. Project/Task/Work Unit No.	
				11. Contract(C) or Grant(G) No. (C) NA81AA-H-00008 (G) OCE-80-14941	
12. Sponsoring Organization Name and Address NOAA and NSF				13. Type of Report & Period Covered Technical	
				14.	
15. Supplementary Notes This report should be cited as: Woods Hole Oceanog. Inst. Tech. Rept. WHOI-82-10.					
16. Abstract (Limit: 200 words) Three surveys were made during June, 1980 on the R/V <u>Oceanographer</u> to measure the regional hydrographic structure in the East China sea near the mouth of the Chang Jiang (Yangtze) River. The objective of the hydrographic program was to document the spatial and temporal structure of the Chang Jiang plume over the continental shelf and characterize the river's influence on the shelf water masses. A summary of the hydrographic observations made during Cruise RP-05-OC-80 on the R/V <u>Oceanographer</u> is presented in graphic form.					
17. Document Analysis a. Descriptors 1. East China sea 2. Hydrography 3. Light transmission b. Identifiers/Open-Ended Terms c. COSATI Field/Group					
18. Availability Statement		19. Security Class (This Report) Unclassified		21. No. of Pages 159	
		20. Security Class (This Page)		22. Price	

Woods Hole Oceanographic Institution WHOI-82-10	1. East China sea 2. Hydrography 2. Light transmission I. Limeburner, R. II. Beardsley, R. C. III. NOAA NA81AA-H-00008 IV. NSF OCE-80-14941	HYDROGRAPHIC STATION DATA IN THE EAST CHINA SEA, JUNE, 1980 by R. Limeburner and R.C. Beardsley. 159 pages. March 1982. Prepared for the National Atmospheric and Oceanic Administration under Cooper- ative Agreement NA81AA-H-00008 and for the National Science Foundation under Grant OCE-80-14941.	Woods Hole Oceanographic Institution WHOI-82-10	1. East China sea 2. Hydrography 2. Light transmission I. Limeburner, R. II. Beardsley, R. C. III. NOAA NA81AA-H-00008 IV. NSF OCE-80-14941	HYDROGRAPHIC STATION DATA IN THE EAST CHINA SEA, JUNE, 1980 by R. Limeburner and R.C. Beardsley. 159 pages. March 1982. Prepared for the National Atmospheric and Oceanic Administration under Cooper- ative Agreement NA81AA-H-00008 and for the National Science Foundation under Grant OCE-80-14941.	Three surveys were made during June, 1980 on the R/V Oceanographer to measure the regional hydrographic structure in the East China sea near the mouth of the Chang Jiang (Yangtze) River. The objective of the hy- drographic program was to document the spatial and tem- poral structure of the Chang Jiang plume over the contin- ental shelf and characterize the river's influence on the shelf water masses. A summary of the hydrographic observations made during Cruise RP-05-OC-80 on the R/V Oceanographer is presented in graphic form.	This card is UNCLASSIFIED	1. East China sea 2. Hydrography 2. Light transmission I. Limeburner, R. II. Beardsley, R. C. III. NOAA NA81AA-H-00008 IV. NSF OCE-80-14941	HYDROGRAPHIC STATION DATA IN THE EAST CHINA SEA, JUNE, 1980 by R. Limeburner and R.C. Beardsley. 159 pages. March 1982. Prepared for the National Atmospheric and Oceanic Administration under Cooper- ative Agreement NA81AA-H-00008 and for the National Science Foundation under Grant OCE-80-14941.	Three surveys were made during June, 1980 on the R/V Oceanographer to measure the regional hydrographic structure in the East China sea near the mouth of the Chang Jiang (Yangtze) River. The objective of the hy- drographic program was to document the spatial and tem- poral structure of the Chang Jiang plume over the contin- ental shelf and characterize the river's influence on the shelf water masses. A summary of the hydrographic observations made during Cruise RP-05-OC-80 on the R/V Oceanographer is presented in graphic form.	This card is UNCLASSIFIED
--	---	--	--	---	--	---	---------------------------	---	--	---	---------------------------