GEF

UNDP/GEF PROJECT ENTITLED "REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM"

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Dandong, China, 4 - 7 September 2006

National Data and Information Collection Activity - Final Reports

The activities to collect national pollution data and information from China and Republic of Korea was scheduled for implementation from October 2005 to March 2006. Progress reports and data collected-to-date were presented at the 2nd RWG-P Meeting (7-10 November 2005, Busan, Republic of Korea). Since then, the final and draft final reports and data have been submitted, and these data are being used for the regional synthesis and Transboundary Diagnostic Analysis (TDA).

The contractors for the national data collection activity were the National Marine Environmental Monitoring Center - China and Korea Ocean Research and Development Institute. One representative from each contracted institute will present the final results to the 3rd RWG-P Meeting. The reports attached hereafter, and the presentations given during Agenda 5.1.1 should highlight pollutant status and trends of particular note, and include some summary analyses on the collected data and information.

After reviewing the reports and presentations, participants will discuss the information just presented, and suggest how certain notable data and information could be included in the regional synthesis and TDA.

It should be noted that due to various constraints existing in the participating countries regarding data exchange and sharing, the existing data has not been fully collected. This has largely affected better understanding of status and trends of marine pollution in the Yellow Sea.

The members of the RWG-P will be invited to consider the existing constraints in the data and information collection, and make a proposal on how the scientific understanding on the marine pollution could be better enhanced.

United Nations Development Programme
Global Environment Facility

Draft Final Report of

"UNDP/GEF Yellow Sea Project's China Pollution Component Data and Information Collection Activity"

Environmental State of the Yellow Sea

—The report based on the data collection and analysis

National Marine Environmental Monitoring Center
State Oceanic administration

Dalian, China, July 2006

CONTENTS

1. Overall environmental condition and tendency in the Yellow Sea

1.1 Overall Environmental conditions and tendency of China Seas

At the end of the 20th century, integrated evaluation of the coastal environment condition has been done in China. The overall trend was that the rapid spread of marine pollution was controlled to a certain extent, but the deteriorative trend of the marine environment has not yet been effectively curbed. The main phenomenons were as follows:

- The pollution scope expanded continuously, most of the estuaries, the gulfs and the waters adjacent to large and medium cities were polluted seriously day by day. In 1998, the area of offshore waters in China, which exceeded Category I National Seawater Quality Standards, was up to about 200,000 sq. km, almost doubled in comparison with 1992.
- It was found that nutrients and organic compounds mainly polluted coastal waters, and their pollution became more and more serious; the pollution of oils and heavy metals was still significant in some regions; synthetic organic toxic substances were detected widely in the coastal water, sediment and organism.
- The damage by biological pollution was serious day by day in the coastal areas. The red tides occurred frequently. The marine ecosystems were destroyed aggravatingly. Over the past 50 years, the total area of the land reclaimed from tidal flats and seas was up to more than 700,000 hectares, and nearly 50% of the coastal wetlands have lost.

The area of polluted waters was rising unceasingly due to the increasing amount of pollutants discharged into the sea. Disorderly, excessive and gratuitous resource exploitation was the main cause of the damages to marine ecology. Since the 1990s the volume of sewage discharged into the coastal waters has been rising gradually in China. The total amount of wastewater discharged from coastal industries into the sea is about 3.98 billion tons, accounting for 19.9% of the total amount of industrial wastewater in China, 19.0% of which enters the Yellow Sea.

In 2005, the area of the waters, which didn't reach the quality standards of clean water, was about 139,000 sq. km, and the overall conditions had not improved actually. The pollution of the coastal waters remains serious. The main polluted waters were distributed over estuaries, bays and some waters adjacent to large and medium cities. The main pollutants in the coastal waters were inorganic nitrogen, active phosphate and oils. The coastal sediment quality was in fair condition in general. The offshore and ocean sediment quality was in good condition. The pollutants in some shellfishes collected from coastal waters were found at high levels. The concentrations of the pollutants from most discharge outlets into the sea exceed the limits of water quality standards. The water quality in the sea areas adjacent to pollutants discharge outlets didn't accord with the quality standards of marine functional zones, the environmental pollution was very serious in the waters adjacent to some pollutants discharge outlets. The amount of pollutants discharged from rivers into the sea was still enormous, and the atmospheric pollutant concentrations and deposition flux into the sea have been steady increasing.

1.2 Environmental conditions and tendency of the Yellow Sea

1.2.1 Overall state and trend of seawater environmental quality

In recent years, there were large fluctuations and variations in the environmental quality conditions of the Bohai Sea. The area of polluted waters expanded unceasingly, especially in 2004 and 2005, The area of waters which exceed Category I National Seawater Quality Standards almost doubled, compared with 2001. The main pollutants were inorganic nitrogen, active phosphate, lead and oils. The area of polluted waters increased rapidly in the coastal waters of Jiangsu. Table 1-2-1 shows the change of the area of the waters failing to reach the quality standards of clean water in the Yellow Sea in recent years. Figure 1-2-1 shows the spatial distribution and change of the waters failing to reach the quality standards of clean water in the Yellow Sea in recent years.

1.2.2 Annual and regional water quality conditions and variation trends

According to "Bulletin of Marine Environmental Quality of China" in recent years, environmental quality conditions and variation tendency of the Yellow Sea were as follows:

In 2001, the area of medium and heavily polluted waters in the Yellow Sea was about 1,850 sq. km. The area of slightly, medium and heavily polluted waters in the coastal regions of Liaoning was about 1,700 sq. km, 1,080 sq. km and 2,590 sq. km respectively. The main polluted waters were distributed over the Yalu River Estuary and the Dalian Bay. The main pollutants were inorganic nitrogen, heavy metals and oils. The coastal waters of Shandong were mostly clean or comparatively clean except the coastal areas of Yantai and the Jiaozhou Bay. The main pollutants were inorganic nitrogen, phosphate and heavy metals. The coastal waters of Jiangsu were mostly clean or relative clean. The main pollutants were inorganic nitrogen and phosphate.

Table 1-2-1. The area of the non-clean waters f in the Yellow Sea (unit: sq. km)

Year	Comparatively clean	Slightly polluted	Medium polluted	Heavily polluted	Total
2001	28,110	1,160	590	1,260	31,120
2002	27,110	560	-	-	27,670
2003	14,440	5,700	3,520	3,200	26,860
2004	15,600	12,900	11,310	8,080	47,890
2005	21,880	13,870	4,040	3,150	42,940

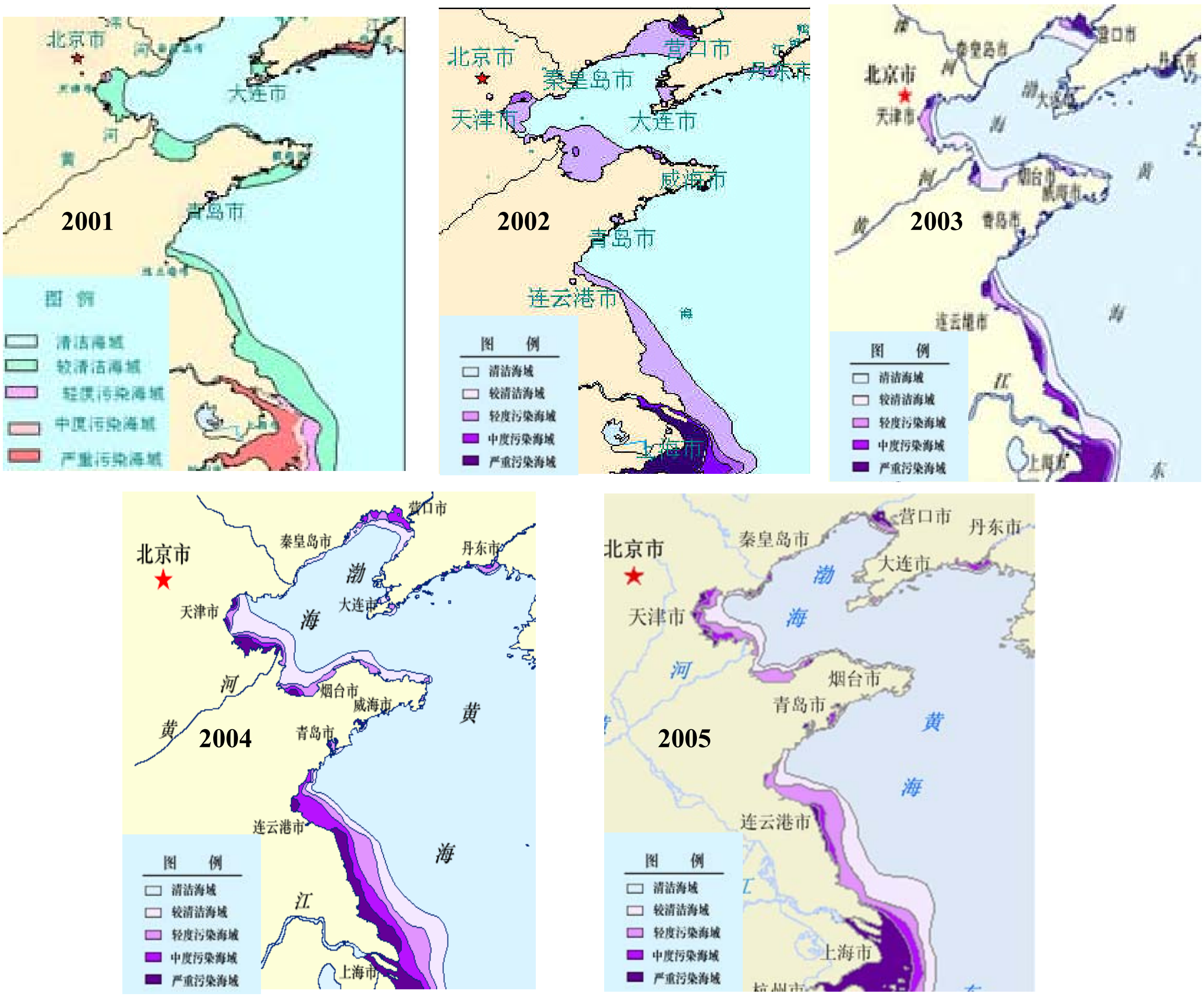


Fig. 1-2-1. Sketch map illustrating the conditions and change of the non-clean waters in the Yellow Sea (2001-2005)

In 2002, the water quality of the Yellow Sea was at good conditions. The area of slightly polluted waters was about 600 sq. km. The area of medium polluted waters and heavily polluted waters reduced compared with 2001. The main pollutants were inorganic nitrogen, phosphate and lead. The area of the waters in the coastal areas of Liaoning, which did not reach the quality standards of clean water, amounted to about 14,270 sq. km. Among them, the area of comparatively clean waters, slightly polluted waters, medium polluted waters and heavily polluted waters was 12,260 sq. km, 580 sq. km 420 sq. km and 1,010 sq. km respectively. The area of slightly polluted waters, medium polluted waters and heavily polluted waters reduced compared with 2001. The main polluted waters were distributed over the Dalian Bay and other sea areas, the main pollutants were inorganic nitrogen, phosphate and lead. The coastal waters of Shandong were mostly clean or comparatively clean except the coastal areas of Yantai which was slightly polluted. The main pollutants were inorganic nitrogen, phosphate and lead. The coastal waters of Jiangsu were mostly clean or comparatively clean. The area of the contaminated waters, which didn't meet the quality standards of clean water, amounted to about 23,310 sq. km. The main polluted waters were distributed over the Xinyi River Estuary, the Sheyang River Estuary, the Changjiang River Estuary. The main pollutants were inorganic nitrogen and lead.

In 2003, the area of the polluted waters in the Yellow Sea reduced slightly. The area which didn't accord with the quality standards of clean water amounted to about 27 thousand sq. km. Among them, the area of slightly polluted waters was about 5.7 thousand sq. km, the area of medium polluted waters and heavily polluted waters was 3.5 thousand sq. km and 3.2 thousand sq. km respectively, mainly located in the Yalu River estuary, the Haizhou Bay and the Dalian Bay. The main pollutants were inorganic nitrogen, active phosphate and lead. The area of the polluted waters in coastal areas of Liaoning decreased, the medium polluted waters and heavily polluted waters were mainly distributed over the Yalu River estuary and the Dalian Bay. Among them, the medium polluted waters and heavily polluted waters in the Yalu River estuary increased in comparison with 2002, the main pollutants were inorganic nitrogen, active phosphate and lead. The area of the polluted waters in the coastal waters of Shandong reduced, the medium polluted waters and heavily polluted waters were mainly located in some sea areas of the Jiaozhou Bay. The main pollutants were inorganic nitrogen, lead and oils. The area of the polluted waters in the coastal waters of Jiangsu slightly reduced, the polluted waters were mainly distributed over some coastal waters from the Sheyang River estuary to the Doulong Port and the Haizhou Bay. The main pollutants were active phosphate, inorganic nitrogen and lead.

In 2004, the polluted sea areas in the Yellow Sea slightly increased, the area which did not reach the quality standards of clean water amounted to about 48 thousand sq. km. Among them, the area of slightly polluted waters and medium polluted waters was about 13 thousand sq. km and 11 thousand sq. km respectively, the area of heavily polluted waters was 8 thousand sq. km, mainly located in the coastal waters of Jiangsu. The main pollutants were inorganic nitrogen and active phosphate. The polluted areas in coastal waters of Liaoning slightly increased in comparison with the year before, the coastal areas, which did not reach the quality standards of clean water, were about 8.6 thousand sq. km. The area of medium polluted waters increased by 1,300 sq. km compared with pervious year. The polluted waters were mainly distributed over the Yalu River estuary and the Dalian Bay. The main pollutants were inorganic nitrogen, active phosphate and oils. The polluted areas in the coastal waters of Shandong slightly increased in comparison with the year before, the medium polluted waters and heavily polluted waters increased by 1,250 sq. km and 340 sq. km respectively. The polluted waters were mainly located in some waters of the Jiaozhou Bay and the south of the Bohai Sea, the Main pollutants were inorganic nitrogen, active phosphate and oils. The polluted areas in coastal waters of Jiangsu slightly increased in comparison with the year before, the medium polluted waters and heavily polluted waters increased by 4,980 sq. km and 5.070 sq. km respectively. The heavily polluted waters were mainly distributed over the sea areas adjacent to pollutants discharge outlets and extended to the offshore waters. The main pollutants were inorganic nitrogen and active phosphate.

In 2005, the area of polluted waters in the Yellow Sea, which did not reach the quality standards of clean water, amounted to about 43 thousand sq. km. Among them, the area of comparatively clean waters, slightly polluted waters, medium polluted waters and heavily polluted waters was 22 thousand sq. km, 14 thousand sq. km, 4 thousand sq. km and 3 thousand sq. km respectively. The heavily polluted waters were mainly located in the Yalu River Estuary, the Jiaozhou Bay and the coastal areas of Jiangsu, the main pollutants were inorganic nitrogen and active phosphate. The area of the polluted coastal waters in Liaoning, which wasn't up to the quality standards of clean water, amounted to about 5,070 sq. km with a decrease of 3,580 sq. km in comparison with the year before. The area of heavily polluted waters increased by 1,100 sq. km compared with pervious year, the main polluted waters were distributed at the sea waters adjacent to the Yalu River Estuary. The main pollutants were inorganic nitrogen, active phosphate and oils. The area of the polluted coastal waters of Shandong, which did not reach the quality standards of clean water amounted to about 11,380 sq. km. The polluted waters were mainly distributed at the Jiaozhou Bay, the main pollutants were inorganic nitrogen, active phosphate and oils. The pollution conditions of the coastal waters of Jiangsu had been improved slightly, the area that did not reach the quality standards of clean water was about 16,320 sq. km. The medium polluted waters and heavily polluted waters decreased by 5,980 sq. km and 4,970 sq. km separately in comparison with 2004. The heavily polluted waters were distributed over estuaries, pollutants discharge outlets and adjacent waters, the main pollutants were inorganic nitrogen, active phosphate.

According to the monitoring data of the Yellow Sea in the past years, the concentrations of active phosphate decreased year after year (shown in Fig.1-2-2). The maximum concentration of active phosphate in the Yellow Sea was about 0.024mg/L, found in 1995. The minimum concentration of active phosphate in the Yellow Sea was about 0.003 mg/L, found in 1996 and 2003 separately.

The concentrations of inorganic nitrogen decreased also year after year (shown in Fig. 1-2-3). The maximum concentration of inorganic nitrogen in the Yellow Sea was about 1.90mg/L, found in 1995. The minimum concentration of inorganic nitrogen in the Yellow Sea was about 0.58 mg/L, found in 2004.

1.2.3 Quality conditions of marine sediments and organisms

The monitoring results of marine sediment in 2005 indicated that the marine sediment quality in the coastal waters of China was at good condition, and the potential ecological risk of integrated sediment pollution was low. However, such pollutants as cadmium, PCBs,

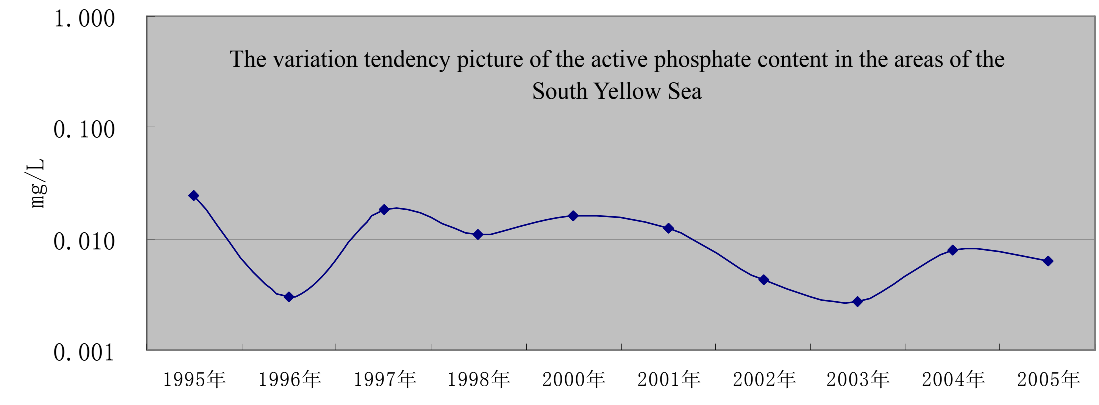


Fig. 1-2-2. Changes of the active phosphate concentration in the waters of the southern Yellow Sea

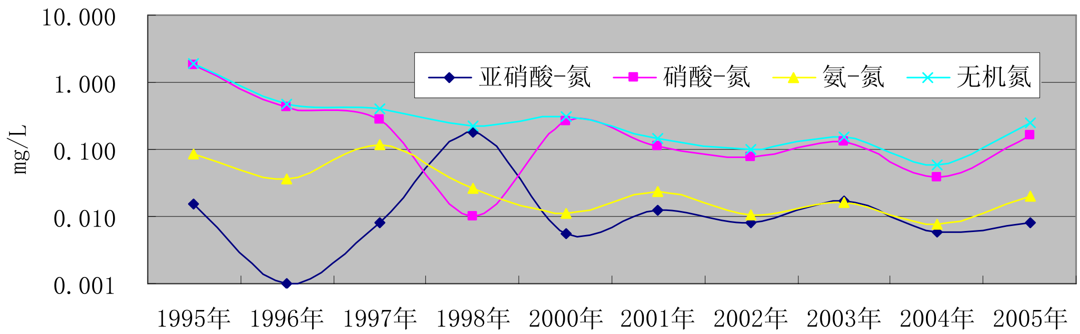


Fig. 1-2-3. Changes of the inorganic nitrogen concentrations in the waters of the southern Yellow Sea

arsenic, copper and oils polluted marine sediments in some coastal areas. Fig. 1-2-4 shows the environmental quality conditions of marine sediments in the offshore waters of China and the results of risk assessment. Among them, the environmental quality of marine sediments in the Yellow Sea was at fair condition, and the ecological risk was comparatively low.

The sediment quality in the waters of Liaoning was at good condition with low potential ecological risks compared with other coastal waters in china. The marine sediments in the Liaodong Bay were polluted by oils and arsenic, the marine sediments in the Dalian Bay were polluted by oils. The sediment quality in the waters of Shandong was at good condition with low potential ecological risks, the marine sediments in the coastal areas of Yantai and the Laizhou Bay were polluted by mercury. The sediment quality in the waters of Jiangsu was at good condition with low potential ecological risks, the marine sediments in the shallow waters in the north of Jiangsu were polluted by cadmium.

According to the monitoring results of the mid and late 1990s, the average concentrations of heavy metals (mercury, cadmium, lead, arsenic) in the fishes, shellfishes and algae collected from the Yellow Sea were shown in Table 1-2-2.

The average concentrations of oils in fishes, shellfishes and Crustaceans collected from the Yellow Sea and the Bohai Sea were shown in Table 1-2-3.

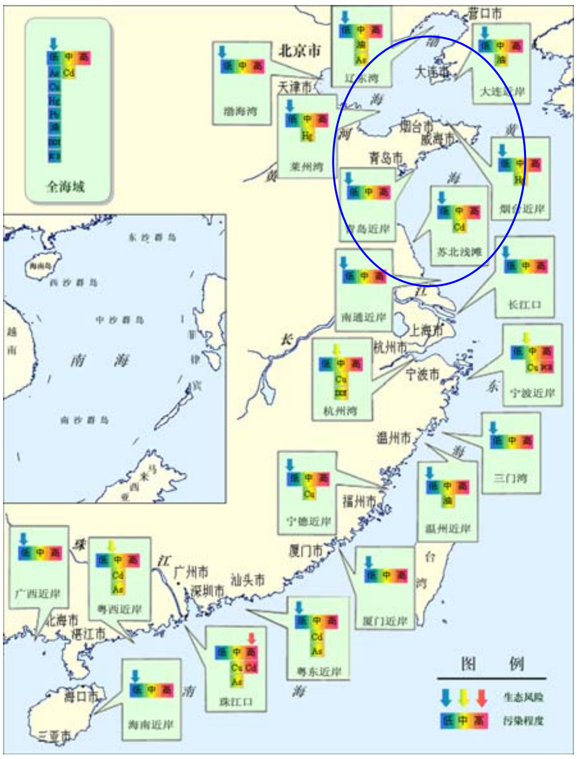


Fig. 1-2-4. Marine sediment quality and ecological risk assessment

Persistent organic pollutants (POPs) in the fishes, shellfishes and algae collected from the Yellow Sea mainly include organochlorine pesticides, PCBs, PAHs and DDT. PAHs include naphthalene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, chrysene, benzo(a)anthracene, benzo(a)pyrene, benzo(e)pyrene ect and their average concentrations were shown in Table 1-2-4.

The average concentrations of DDTs and PCBs in the fishes, shellfishes and algae collected from the Yellow Sea were shown in Table 1-2-5.

According to the hygienic standards for food issued by the People's Republic of China and the World Health Organization and derived from some scholar's finds, the standard-exceeding rates of the residual contents of Hg、Cd、Pb、As、DDTs、PCBs and oils in fishes and shellfishes collected from the Yellow Sea were shown in Table 1-2-6.

We used the statistical method of t-test for two correlated samples to analyse the historical data of 1997 and 1990 (shown in Table 1-2-7), and found that the concentration of Hg in the shellfishes increased, the concentrations of Cd in the shellfishes reduced and the concentrations of Pb and As in the shellfishes reduced significantly (α=0.05) in the Yellow Sea. The decrease of the concentrations of PCBs, DDTs and oils in the organisms in the Yellow Sea indicated that the pollution of PCBs, DDTs and oils was reduced.

Table 1-2-2. Average contents of heavy metals in organisms collected from the Yellow Sea

Biological categories or types	Heavy metals contents (10^{-6} wet weigh)			
	Hg	Cd	Pb	As
Ruditapes philippinarum	0.008	0.14	0.12	0.489
Scapharca subcrenata	0.008	1.14	0.12	0.397
Shellfishes	0.011	0.56	0.11	0.423
Uiva pertusa	0.006	0.04	0.27	0.370
Fishes	0.024	0.02	0.08	0.340

Table 1-2-3. Average contents of oils in marine organisms collected from the Yellow Sea and the Bohai sea

Biological categories or types	The average contents of petroleum hydrocarbons (10^{-6} wet weigh)
Ruditapes philippinarum	20.4
Scapharca subcrenata	13.7
Shellfish	19.5
Fish	2.01

Table 1-2-4. Average contents of PAHs in the in the shellfishes, fishes and algae colleted from the Yellow Sea

Types of pollutants	Average pollutants contents (10^{-9} wet weigh)		
	Shellfishes	Fishes	*Uiva pertusa*
Naphthalene	1.7	6.1	2.5
Fluorene	1.0	2.0	0.7
Phenanthrene	3.3	3.5	3.5
Anthracene	2.0	1.5	2.5
Fluoranthene	4.2	1.4	1.7
Pyrene	3.9	0.7	3.1
Chrysene	39.4	-	21.2
Benzo(a)anthracene	82.7	-	-
Benzo(a)pyrene	-	-	-
Benzo(e)pyrene	-	-	-
PAHs	22.0	13.2	18.9

Table 1-2-5. Average contents of DDTs and PCBs in the organisms colleted from the Yellow Sea

(10^{-9} wet weigh)

Biological types	DDTs	p.p'-DDE	p.p'-DDT	p.p'-DDD	o.p'-DDT	PCB
Ruditapes philippinarum	6.1683	0.7393	3.6362	2.7228	0.0874	1.6331
Scapharca subcrenata	1.0486	0.8391	0.2489	0.2805	0.2320	5.2587
Shellfishes	16.9342	1.3370	1.5650	1.5848	1.4646	1.8243
Fishes	8.2660	2.3527	1.6233	4.7879	0.3067	0.9346

Table 1-2-6. Standard-exceeding rates of pollutantsin fishes and other organisms collected from the Yellow Sea and the Bohai Sea

Pollutants	Biological categories	Standard 1) (10^{-6} wet weigh)	Standard-exceeding rate (5)
Hg	Shellfishes	0.3	0
	Fishes	0.3	0
Cd	Shellfishes 2)	2.0	6.5
	Fishes	0.1	0
Pb	Shellfishes	1.0	0
	Fishes	1.0	0
As	Shellfishes	1.0	0
	Fishes	0.5	0
DDTs	Shellfishes	0.1	15.2
	Fishes	0.1	10
PCBs 3)	Shellfishes	0.1	0
	Fishes	0.1	0
Petroleum Hydrocarbons 4)	Shellfishes	20	21.4
	Fishes	20	0

Note: 1) Hygienic standards for food issued by China; 2) Standards issued by world health organization; 3) IJC Aquatic Life

Guideline; 4) Biological standard study group under Third Institute of Oceanography, SOA of China.

Table 1-2-7. The t-test results of the contents of the pollutants in shellfishes in the Yellow Sea and the Bohai Sea in 1997 and 1990

Pollutants	The Yellow Sea	The Yellow Sea
Hg	Decreased	Increased
Cd	Decreased	Decreased
Pb	Remarkably	Decreased
As	Remarkably	Remarkably
PCBs	Decreased	Decreased
DDTs	Decreased	Decreased
Petroleum Hydrocarbons	Decreased	Decreased

1.2.4 Viruses and bacteria in the coastal waters

The viruses in the coastal waters of the Yellow Sea required further studies. In 1988, hepatitis A virus outbroke in the coastal areas of Shanghai, Zhejiang and Jiangsu, caused by the consumption of Scapharca subcrenata. The conclusion of investigation indicated that Scapharca subcrenata carried hepatitis A virus. There were several studies on the bacteria in the Yellow Sea and the Bohai sea, such as "Distribution of coliform in the waters of Dalian Coastal Scenic Area", "Ecology of autotrophic bacteria and heterotrophic bacteria in the waters of the north of the Yellow Sea" and "Ecological distribution of feal coliform and heterotrophic bacteria in the waters of the Changjiang River Estuary". In recent years, detections and analysis of the bacteria in shellfishes and their living Environment including water and sediment have been developed.

The density of the feal coliform in the coastal surface waters of the Yellow Sea and the Bohai Sea ranged from 40 ind/L to more than 48000 ind/L. 56.3% of the water samples accorded with the Category I National Seawater Quality Standards. The water samples that surpassed the standards were mostly collected from the tourist areas where human activities were frequent. In summer, the amount of feal coliform in surface water of bathing beach may exceed the standards to a large extent.

The density of the heterotrophic bacteria living in the coastal surface water of the Yellow Sea and the Bohai Sea ranged from 2.5×10^5 cfu/L to 1.0×10^8 cfu/L, the average density for the whole area was1.2×10^7 cfu/L. The density of the heterotrophic bacteria in surface sediment ranged from 2.8×10^3 cfu/ g to 7.5×10^5 cfu/ g, the average density for the whole area was 1.3×10^5 cfu/ g. There were more heterotrophic bacteria living in coastal waters than in offshore areas.

2. Analysis on the sources of pollutants discharged into the Yellow Sea

2.1 Land-based sources of pollutants

According to the survey and incomplete statistics in the mid 1990s, there were over 90 different kinds of pollutants discharge outlets to the Yellow Sea. Annual discharge load to the sea amounted to about 700 million tons. The amount of river runoff was about 30 billion m3 per year. The results of the treatment and discharge of industrial wastewater in the coastal area of the Yellow Sea in 1996 were showed in Table 2-1-1. Although industrial wastewater treatment rate in the area had reached 70%, the rate in accordance with the discharging standards for industrial wastewater was below 35%. At the same time, a large amount of sewage that wasn't purified from densely populated areas and wastewater produced by well-developed agriculture was discharged into the sea, so the discharge load (amount per sq. km) to the Yellow Sea was much more than the national average discharge load. The amount of four kinds of such pollutants as COD, oils, inorganic nitrogen and inorganic phosphate discharged into the sea accounted for 99.8% of the overall discharge load of pollutants.

In the mid 1990s, the number of pollutants discharge outlets directly to the Yellow Sea accounted for 62% of the total number of land-based coastal discharge outlets to the Yellow Sea. The amount of wastewater from the discharge outlets directly to the Yellow Sea accounted for 40% of the total amount of land-based wastewater discharged into the Yellow Sea. The amount of pollutants from the discharge outlets directly to the Yellow Sea accounted for 2.8% of the total amount of land-based pollutants discharged into the Yellow Sea. The amount of three kinds of such pollutants as COD, oils and inorganic nitrogen directly discharged into the sea accounted for 99.9% of the total amount of pollutants from the discharge outlets directly to the Yellow Sea.

The number of the complex discharge outlets to the Yellow Sea accounted for 13% of the total number of land-based coastal discharge outlets to the Yellow Sea. The amount of wastewater from the complex discharge outlets to the Yellow Sea accounted for 59% of the total amount of land-based wastewater discharged into the Yellow Sea. The amount of pollutants from the complex discharge outlets to the Yellow Sea accounted for 11% of the total amount of land-based pollutants discharged into the Yellow Sea. The amount of four kinds of such pollutants as COD, oils, inorganic nitrogen and inorganic phosphate discharged into the sea accounted for 99.9% of the total amount of pollutants from the complex discharge outlets.

The number of the municipal sewage outfalls to the Yellow Sea accounted for 26% of the total number of land-based coastal discharge outlets to the Yellow Sea. The amount of wastewater from municipal sewage outfalls to the Yellow Sea accounted for 19.9% of the total amount of land-based wastewater discharged into the Yellow Sea. The amount of pollutants from the municipal sewage outfalls to the Yellow Sea accounted for 2% of the total amount of land-based pollutants discharged into the Yellow Sea. The amount of four kinds of such pollutants as COD, oils, inorganic nitrogen and inorganic phosphate discharged into the sea accounted for 99.9% of the total amount of pollutants from the municipal sewage outfalls.

The number of the rivers entering the Yellow Sea accounted for 26% of the total number of land-based coastal discharge outlets to the Yellow Sea. The amount of pollutants discharged into the Yellow Sea carried by the rivers accounted for 19.9% of the total amount of land-based pollutants discharged into the Yellow Sea. The amount of three kinds of such pollutants as COD, oils and inorganic nitrogen discharged into the sea accounted for 99.9% of the total amount of pollutants from the rivers.

In 1999, the amount of industrial wastewater discharged from 11 coastal provinces (autonomous regions, municipalities directly under the Central Goverment) into the sea amounted to 10.02 billion tons. Among them, the amount of industrial wastewater discharged directly into the seas was about 36.7 million tons, with a decrease of 310 million tons (decrease rate was 7.8%) compared with 1998, the amount of industrial wastewater discharged directly into theYellow Sea was about 710 million tons. In the same year, the amount of the sewage discharged from 11 coastal provinces (municipalities) was 10.81 billion tons. Among them, the amount of the sewage discharged directly into the seas was about 3.95 billion tons million tons, the amount of the sewage discharged directly into the Yellow Sea was about 760 million tons, accounting for 15.4% of total discharging amount.

The results of the monitoring conducted in in 2005 indicated that the phenomenon of standard-exceeding pollutants discharge in the coastal area of the Yellow Sea was still very serious (shown in Table 2-1-2). The environmental quality of the waters adjacent to dominant pollutants discharge outlets was at poor condition (shown in Table 2-1-3).

Table 2-1-1. Discharge and treatment of industrial wastewater in the coastal area of the Yellow Sea in China (Unit: 10 thousand tons)

Region	Total discharging amount of industrial wastewater	Discharging amount to the sea without treatment	Industrial wastewater					
			treated Industrial wastewater	treatment rate（%）	Discharging amount in accordance with the discharging standard for industrial wastewater	Rate in accordance with the discharging standard for industrial wastewater（%）	Discharging amount in accordance with discharging standard for Industrial wastewater after treatment	Rate in accordance with the discharging standard for Industrial wastewater after treatment（%）
Liaoning	124544	23896	155617	85.60	84184	67.6	35394	22.7
Jiangsu	219677	3478	139416	74.95	151859	69.1	46618	33.4
Shandong	101018	7873	204184	85.03	47849	47.4	24459	12.0

Source: China Ocean Statistical Yearbook (1997). Beijing: China Ocean Press.

Table 2-1-2. Statistics on the standard-exceeding pollutants discharge outlets to the sea in the coastal area of the Yellow Sea in 2005

Province (Autonomous Region, Municipality)	Number of monitoring pollutants discharge outlets	Number of standard-exceeding pollutants discharge outlets	Proportion of standard-exceeding pollutants discharge outlets（%）
Liaoning	83	54	65.1
Shandong	78	75	96.2
Jiangsu	52	45	86.5

Table 2-1-3. Grades of the eco-environment quality in the waters adjacent to some dominant pollutants discharge outlets to the sea (2005)

Name and location of pollutants discharge outlets		Dominant functional zones	Required water quality Categories	Actual water quality categories	Grades of ecological environment quality
Liaoning	Pollutants discharge outlets of Dalian Chemical Industry Company	Port zones	CategoryⅣ	Surpassed CategoryⅣ	Better
	Pollutants discharge outlets of the cooling Water of Huaneng Dandong Power plant	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst
	Daling River estuary into the sea	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst
Shandong	Pollutants discharge outlets of Qingdao Soda Ash Industrial Company Ltd	Prohibitive mariculture zones	CategoryⅢ	Surpassed CategoryⅣ	Bad
	Pollutants discharge outlets of Tuandao sewage treatment plant	Prohibitive mariculture zones	CategoryⅢ	Surpassed CategoryⅣ	Bad
	Pollutants discharge outlets of Xiaomaidao sewage treatment plant	Travelling resort	CategoryⅡ	CategoryⅣ	Bad
	Pollutants discharge outlets of Shandong Marine Chemical Group	Mariculture zones	CategoryⅡ	CategoryⅢ	Better
	Yu River estuary into the sea	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst
	Pollutants discharge outlets of Zhanhua Power plant	Multiplying regions	CategoryⅡ	Surpassed CategoryⅣ	Worst
	Pollutants discharge outlets of Shandong Lubei Group	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst
Jiangsu	Linhong River estuary into the sea	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst
	Zhongshan River estuary into the sea	Mariculture zones	CategoryⅡ	Surpassed CategoryⅣ	Worst

2.2 Non-point source pollution

According to the incomplete statistics in the mid 1990s, 230 million tons of fertilizers were applied in the coastal areas of the Yellow Sea; the average applying intensity was about 27Kg/mu (Chinese unit of area equal 1/15 of a hectare). Among them, the applying percentages of nitrogen fertilizers, phosphate fertilizers, compound fertilizers and others fertilizers were about 58%, 20%, 16% and 6% respectively. 14 million tons of pesticides were used in the coastal areas of the Yellow Sea, and the average applying intensity was about 1.75Kg/mu. Among them, the applying percentages of Organic phosphorus pesticides and organochlorine pesticides were about 92% and 7.5%. According to statistical estimates, the area of aquiculture zones distributed along the coastline of the Yellow Sea was about 117 million mu, and the wastewater from aquiculture discharged into the sea was 400 million tons in every year.

2.3 Atmospheric deposition

The results of atmospheric monitoring conducted in the mid-1990s indicated that atmospheric deposition of heavy metals and nutritional elements had become one of the main sources of pollution in the coastal waters of the Yellow Sea. The concentration of total organic pollutants in atmosphere was 11.4-31.5 g / m3. The atmospheric quality was at medium polluted level with the exception of the coastal area in the Yalu River Estuary. The results of marine atmospheric monitoring based on the station in Dalian showed that the atmospheric quality in 1995-1998 was at medium polluted level. Among them, the rate of TSP which exceed Category I Air Quality Standards was 21% to 64%, other indicators didn't exceed the standards. The results of marine atmospheric monitoring based on the station in Qingdao showed that the atmospheric quality in 1995-1998 was at slightly polluted level, the rate of TSP which exceed Category I Air Quality Standards was 7% to 15%.

The atmospheric deposition flux of dust was（55.1-571）×1010g/a, roughly equal to 4% -38% of the flux carried by rivers into the Yellow Sea. The deposition fluxes of elements in atmospheric aerosols were shown in Table 2-3-1.

Table 2-3-1. Deposition fluxes of elements in atmospheric aerosols in the Yellow Sea (mg/m^2a)

Elements	Average value	Range
Cu	0.23	0.057-0.60
Cd	0.04	0.011-0.11
Pb	1.92	0.38-4.94
Zn	2.91	0.62-6.74

During the period of 2002-2005, State Oceanic Administration conducted marine atmospheric environmental quality monitoring in four representative areas, such as the coastal areas of Dalian and Qingdao, Yangtze River Estuary, Pearl River Estuary. The results showed that the concentrations and deposition flux of TSP in marine atmospheric aerosols didn't change over time in four representative sea areas of China. The concentrations and deposition flux of copper, lead and cadmium were on an upward trend, especially for lead and copper (see Table 2-3-2).

Table 2-3-2. Variation tendencies of the atmospheric quality in four representative sea areas of China (2002-2005)

Sea areas	Atmospheric deposition flux				contents of pollutants in aerosols			
	TSP	Cu	Pb	Cd	TSP	Cu	Pb	Cd
Dalian Sea area	-	↗	↗	⇔	⇔	↗	↗	+
Qingdao Sea area	+	↗	-	⇔	↗	↗	↘	⇔
Coastal area of the Changjiang Estuary	-	**↗**	**↗**	+	-	**↗**	**↗**	↗
All national sea areas	⇔	**↗**	↗	+	⇔	**↗**	↗	+

↗	upwards (α=0.01)
↗	upwards (α=0.1)
+	Not significant upwards
⇔	No change over time
-	Not significant downwards
↘	downwards (α=0.01)

Note: TSP refers to all particles in atmosphere.

2.4 Discharge and treatment of wastewater in the coastal areas

With China's rapid economic growth, the production of important industrial raw materials such as steel, electrolysis aluminum, cement, etc. increases substantially, and the supply of energy such as coal, electric power etc. falls short of demand. The rapid growth of heavy-pollution and high-energy-consumption industries brings great pressure on the environment, the environment pollution by the rapid growth of some industries have exceeds the capacity of environmental protection efforts. The discharging amount of wastewater and pollutants from three provinces around the Yellow Sea doesn't change over time. The discharge and treatment of wastewater is at a medium level, as shown in Table 2-4-2a to Table 2-4-2c.

Table 2-4-1. Statistics on total amount of pollutants discharged into the Yellow Sea in recent years

Year	Waste water (10 million tons)			COD (10 thousand tons)			Ammoniac nitrogen (10 thousand tons)		
	Total	Industry	Domestic	Total	Industry	Domestic	Total	Industry	Domestic
2002	5.9	2.7	3.2	16.2	4.3	11.9	1.8	0.3	1.5
2003	5.9	2.6	3.3	15.2	4.1	11.1	1.6	0.3	1.3
2004	5.8	2.6	3.2	15.4	4.2	11.2	1.5	0.2	1.3

Table 2-4-2a. Discharge and treatment of land-based industrial wastewater into the sea in recent years

Year	region	Counted Number of Industrial Enterprises	Total discharging amount of industrial wastewater (10 thousand tons)	Discharging amount to the Sea Without Treatment (10 thousand tons)	Amount in compliance with the discharging standard for Industrial Wastewater (10 thousand tons)	Wastewater treatment facilities (sets)	Running Cost of Facilities in the Year (10 thousand Yuan)
2002	Liaoning	139	665	311	585	78	1210.4
	Jiangsu	958	18857	1049	18652	484	9653.7
	Shandong	448	7849	5233	7848	388	12607.2
	Total	**1545**	**27372**	**6593**	**27085**	**950**	**23471.3**
2003	Liaoning	128	1083	433	1004	70	933.3
	Jiangsu	829	17846	798	17846	465	11446.0
	Shandong	454	7141	2225	7075	393	13683.2
	Total	**1411**	**26070**	**3456**	**25925**	**928**	**260062.5**
2004	Liaoning	92	439	25	405	55	648.4
	Jiangsu	779	16782	440	16615	469	8756.1
	Shandong	444	8171	2257	7900	381	16939.7
	Total	**1315**	**25392**	**2722**	**24920**	**905**	**26344.2**

Table 2-4-2b. Discharge and treatment of land-based industrial wastewater into the sea in recent years (Unit: ton)

Year	region	Discharging amount of pollutants in industrial wastewater									
		Hg	Cd	Cr^{6+}	Pb	As	Volatile phenolic compounds	Cyanide	COD	Oils	Ammoniac nitrogen
2002	Liaoning			0.009	0.038	0.006		0.1	1476.5	0.0	627.0
	Jiangsu		0.003	0.745	0.012	0.645	3.391	0.6	25185.4	16.5	2199.7
	Shandong			0.110	0.001	0.039	1.008	0.2	16262.4	14.8	338.0
	Total		**0.003**	**0.864**	**0.051**	**0.690**	**4.399**	**0.9**	**42924.3**	**31.3**	**3164.6**
2003	Liaoning			0.003		0.006			2130.2		635.8
	Jiangsu		0.011	1.201	0.009	0.645	3.444	0.3	22141.9	17.9	2345.8
	Shandong			0.117		0.040	0.633	0.4	16779.8	18.0	397.8
	Total		**0.011**	**1.321**	**0.010**	**0.691**	**4.077**	**0.7**	**41051.9**	**35.9**	**3379.4**
2004	Liaoning			0.002		0.006			886.0		10.7
	Jiangsu			1.325	0.135	0.672	3.351	0.5	17148.0	17.2	1385.0
	Shandong			0.107	0.001		0.883	0.2	24314.3	17.3	606.5
	Total		**0.010**	**1.434**	**0.136**	**0.678**	**4.234**	**0.7**	**42348.3**	**34.4**	**2002.1**

Table 2-4-2c. Discharge and treatment of land-based industrial wastewater into the sea in recent years (Unit: ton)

Year	region	Discharging amount of pollutants in industrial wastewater				
		Volatile phenolic compounds	Cyanide	COD	Oils	Ammoniac nitrogen
2002	Liaoning		0.8	3056.7		66.5
	Jiangsu	5.6	17.5	93326.9	14.7	539.3
	Shandong	24.7	3.1	152241.5	104.7	705.6
	Total	**30.3**	**21.4**	**248625.2**	**119.4**	**1311.5**
2003	Liaoning			6803.0		32.2
	Jiangsu	19.6	11.3	81605.0	1.7	824.2
	Shandong	21.1	3.5	157763.5	97.3	731.5
	Total	**40.7**	**14.8**	**246171.6**	**99.1**	**1587.8**
2004	Liaoning			2137.6		0.2
	Jiangsu	7.3	15.8	44275.1	3.9	10945.7
	Shandong	20.6	3.5	194624.1	63.5	394.3
	Total	**27.9**	**19.4**	**241036.7**	**67.4**	**11340.3**

3. Analysis of spatial and temporal distribution of main contaminants in the The Yellow Sea

3.1 The natural environmental background of the The Yellow Sea

3.1.1 The conditions of tidal current

The The Yellow Sea is a semi-closed sea, its frangibility of environment is determined by its dynamical environmental characteristics, including semi-closed sea area, the great dependence of species on the natural habitats and the strong influence of rivers flowing into the The Yellow Sea. The The Yellow Sea Coastal Current is a diluent current that flows into the Changjiang river estuary from the Bohai Bay across the Shandong peninsula and the coastal area of JiangSu (shown in Fig. 3-1-1), the direction of this current remains steadily all of the years. This area has lower salinity and wider range temperature, so the biota is dominated by the wide-temperature and low-salinity species. The species varies greatly between summer and winter, the number of species increases gradually from the north to the south. That is the basic ecosystem characteristic of the coastal shallow areas of the The Yellow Sea.

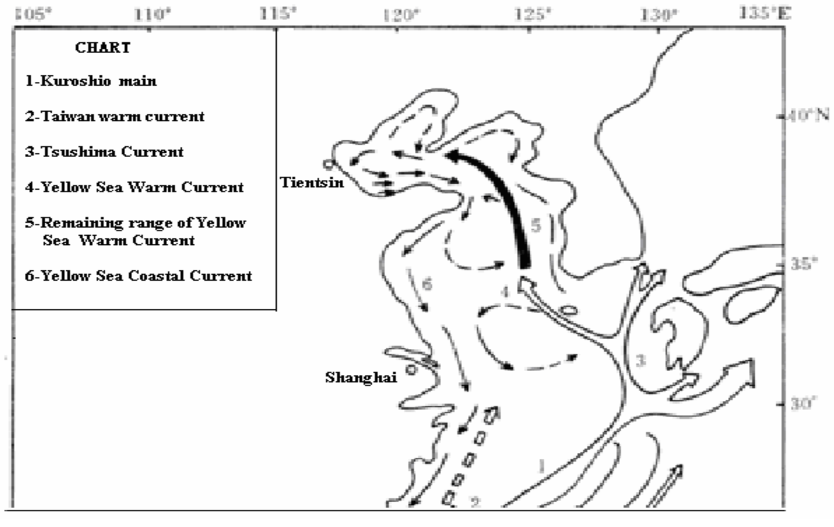


Fig. 3-1-1. Chart showing the currents of the The Yellow Sea

The tide, tidal range and the residual currents in the coastal areas (shown in Fig. 3-1-2, Fig. 3-1-3, Fig. 3-1-4) indicate that the dynamical environment of the The Yellow Sea is in the condition of regular movement

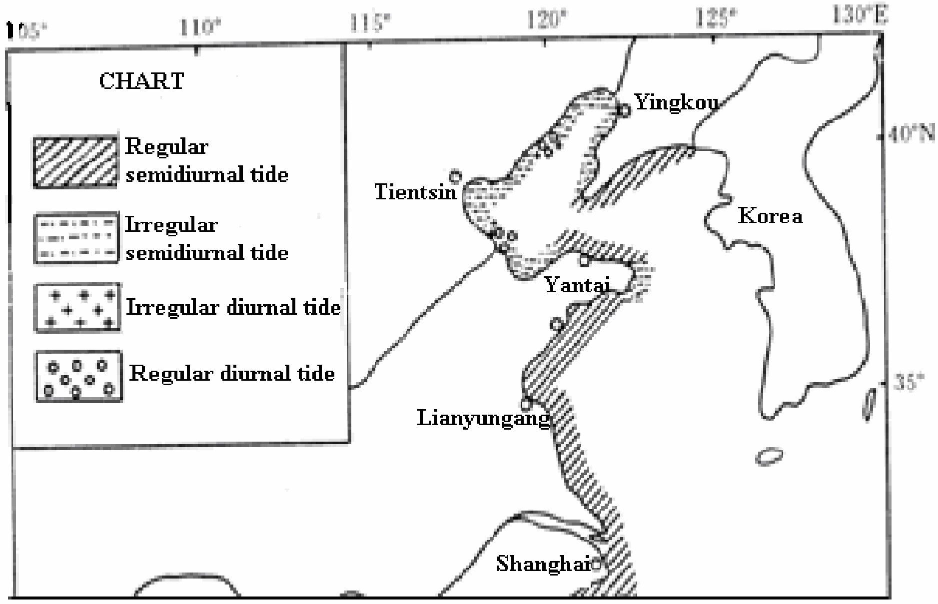


Fig. 3-1-2. Tide of the The Yellow Sea

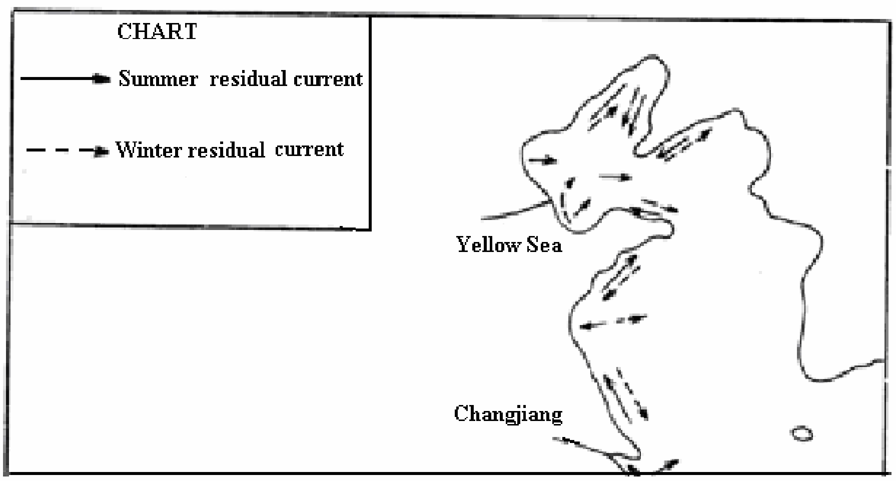


Fig. 3-1-3. Residual currents in coastal areas of the The Yellow Sea

3.1.2 Variation of salinity

Variations of salinity in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig. 3-1-4-Fig. 3-1-5. Distribution of salinity in autumn 2000 and spring 2001 is shown in Fig. 3-1-6-Fig. 3-1-9. Variations of salinity in the coastal waters of China in recent years are shown in Fig. 3-1-9-Fig. 3-1-12.

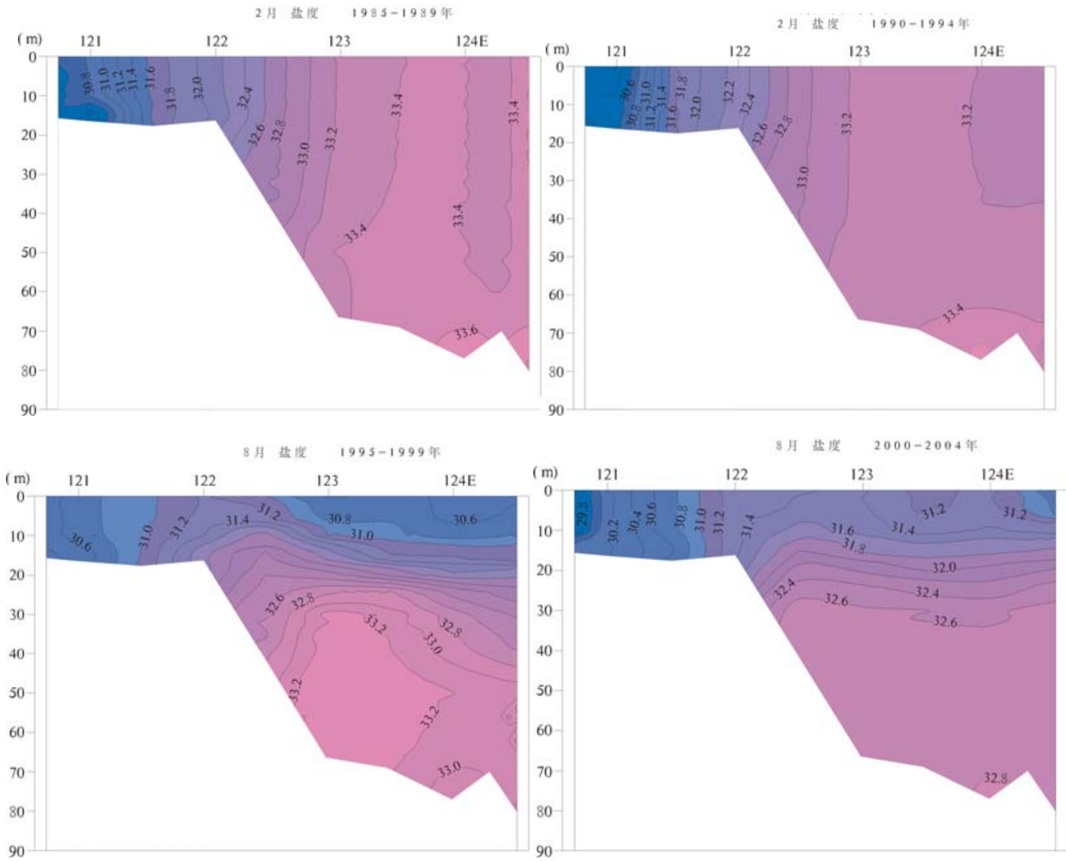


Fig. 3-1-4. Variations of salinity in the The Yellow Sea in recent 20 years (February)

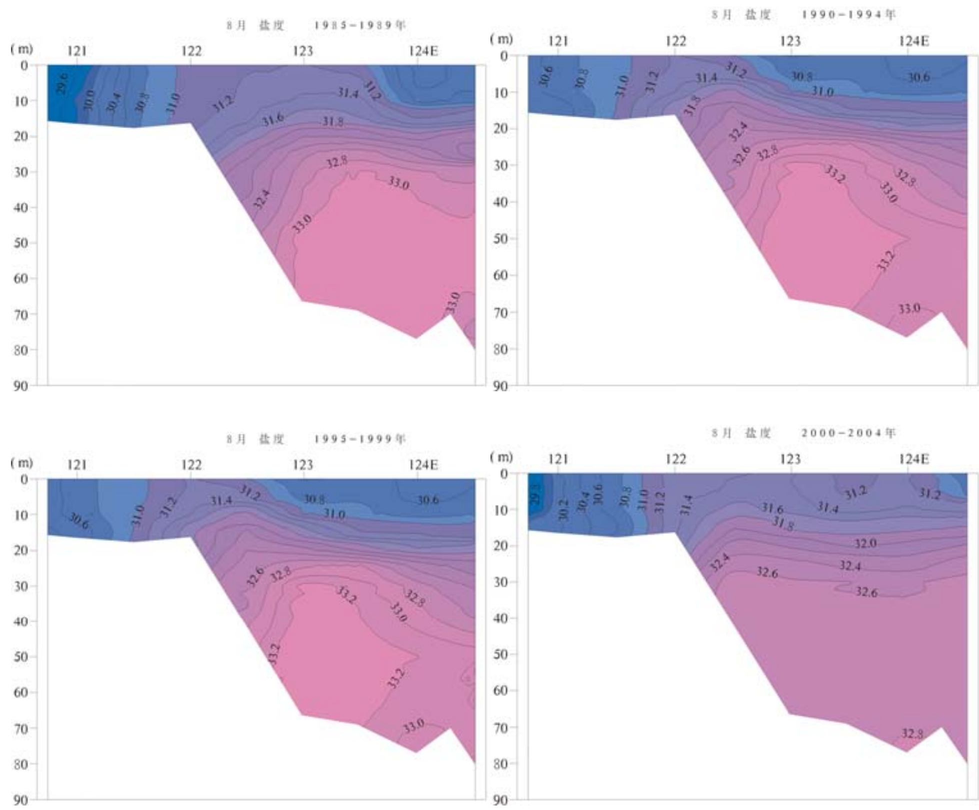


Fig. 3-1-5. Variations of salinity in the The Yellow Sea in recently 20 years (August)

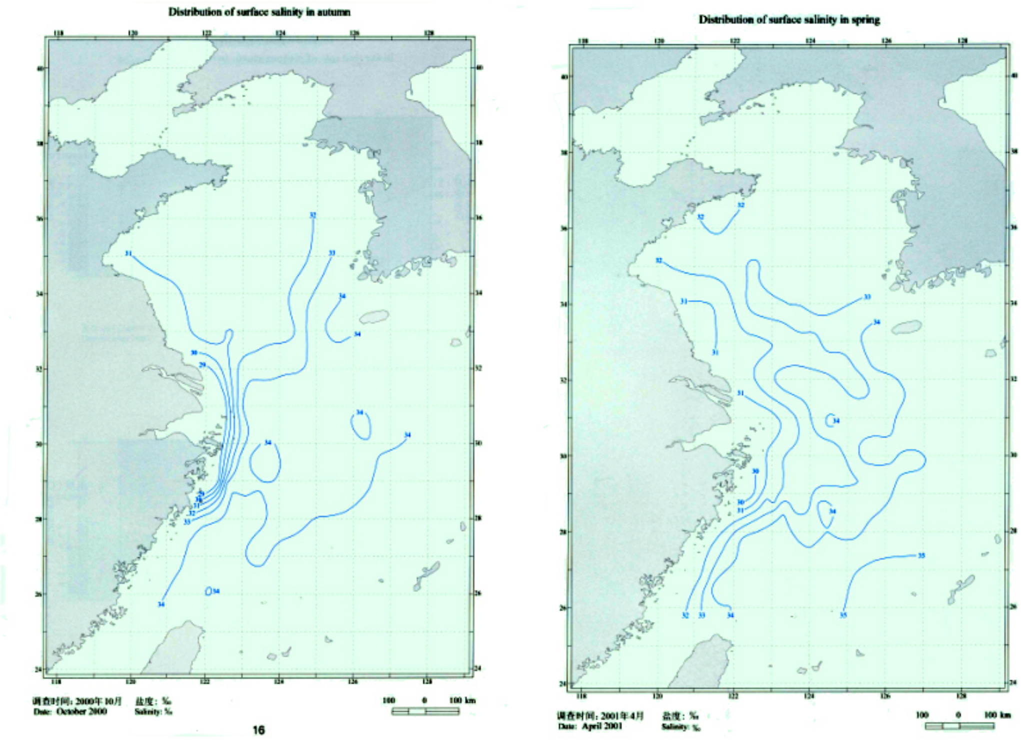


Fig. 3-1-6. Distribution of salinity in the surface seawater of the The Yellow Sea in autumn 2000 (left) and spring 2001 (right)

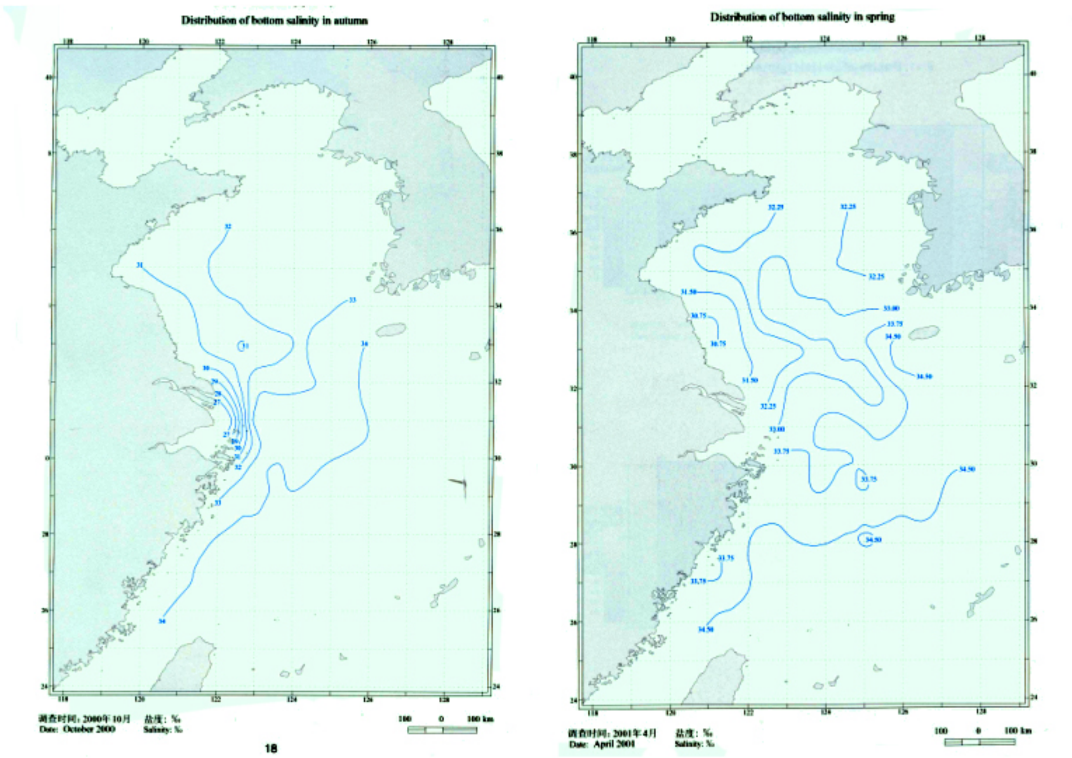


Fig. 3-1-7. Distribution of salinity in the bottom seawater of the The Yellow Sea in autumn 2000 (left) and spring 2001 (right)

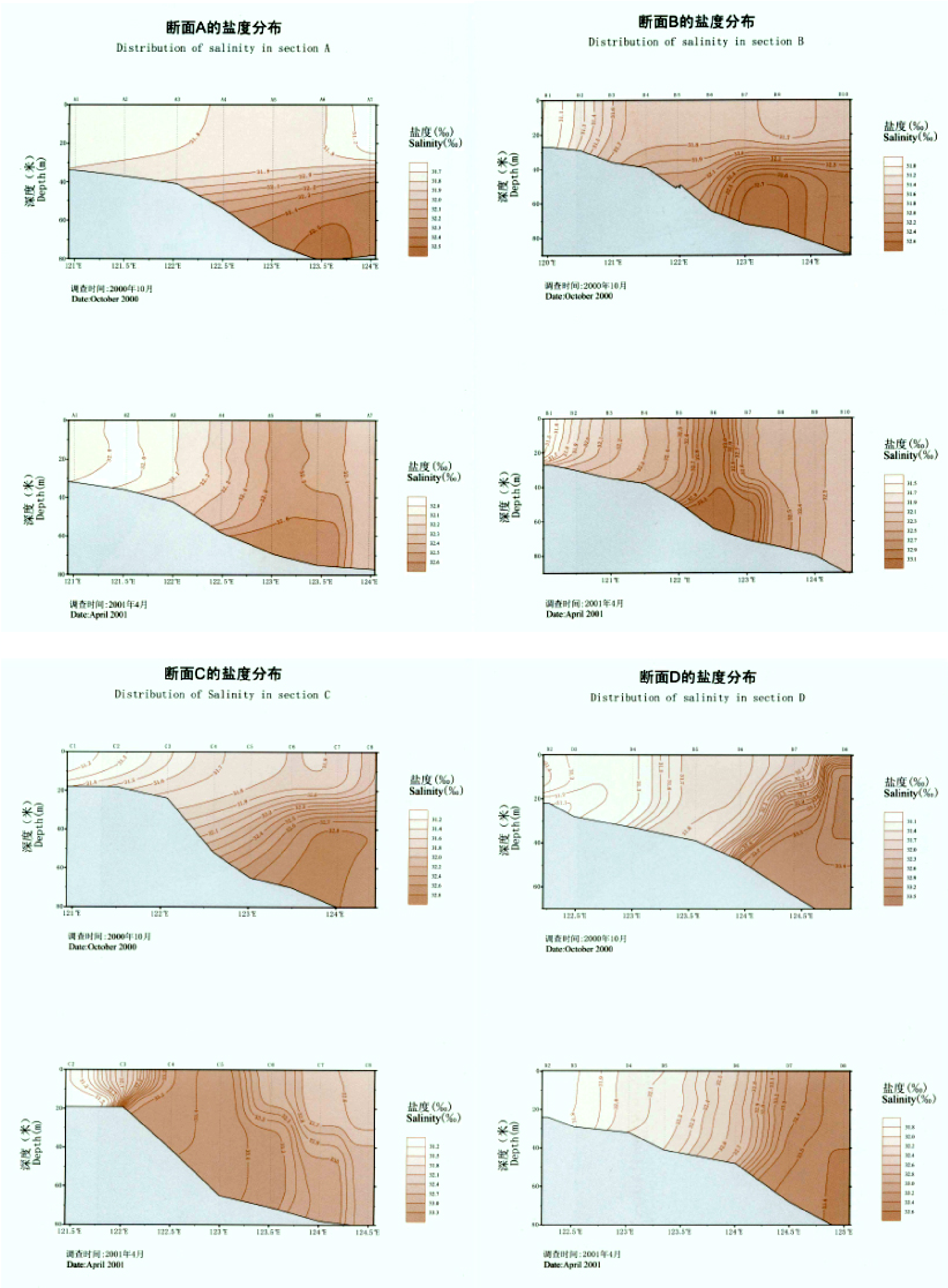


Fig. 3-1-8. Distribution of salinity in the section located in the The Yellow Sea in autumn 2000 and spring 2001 (A: 36°, B: 35°, C: 34°, D:33°)

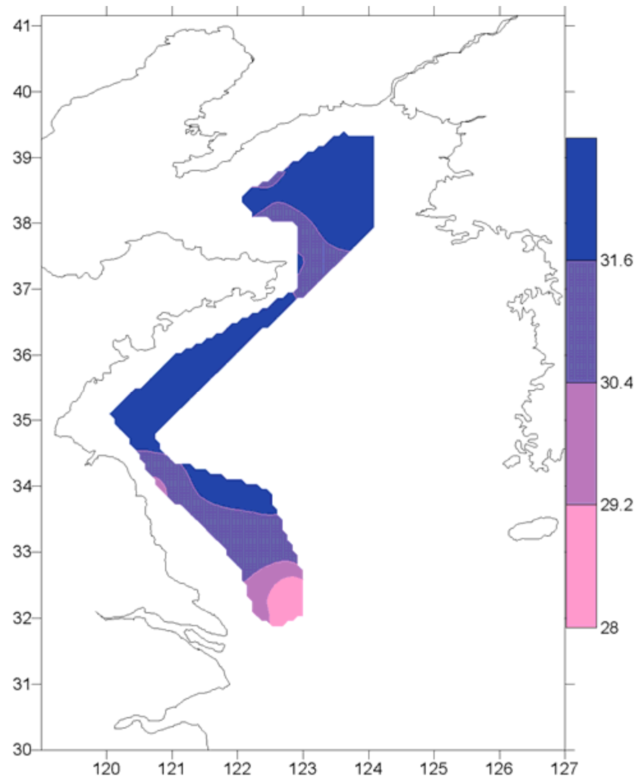


Fig. 3-1-9. Distribution of salinity in the coastal waters of the The Yellow Sea (Aug. 2002)

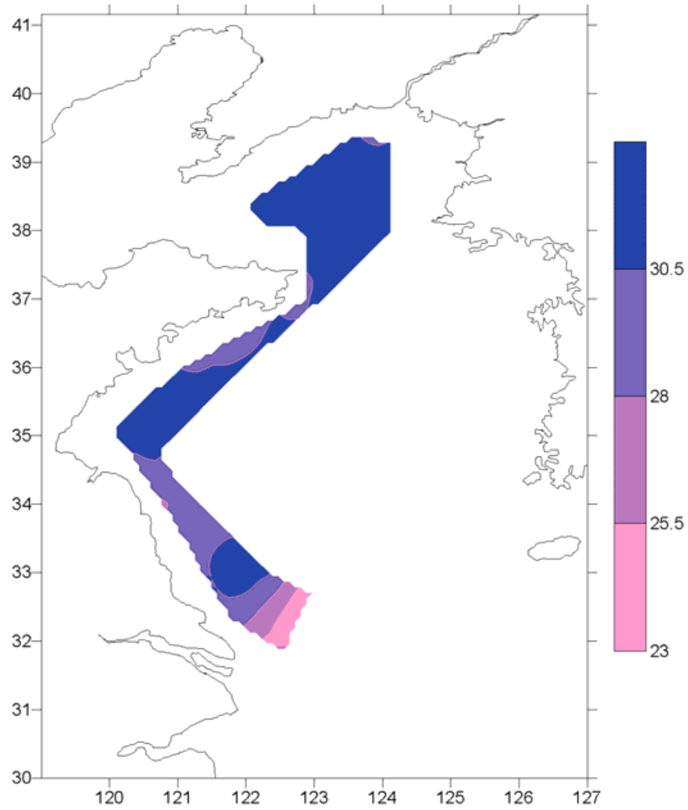


Fig. 3-1-10. Distribution of salinity in the coastal waters of the The Yellow Sea (Aug. 2003)

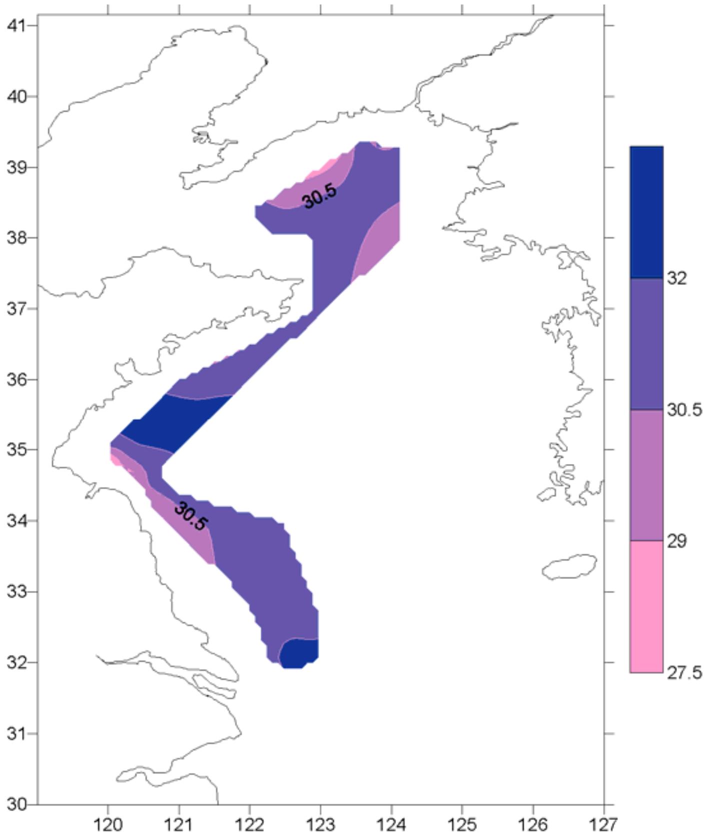


Fig. 3-1-11. Distribution of salinity in the coastal waters of the The Yellow Sea (Aug. 2004)

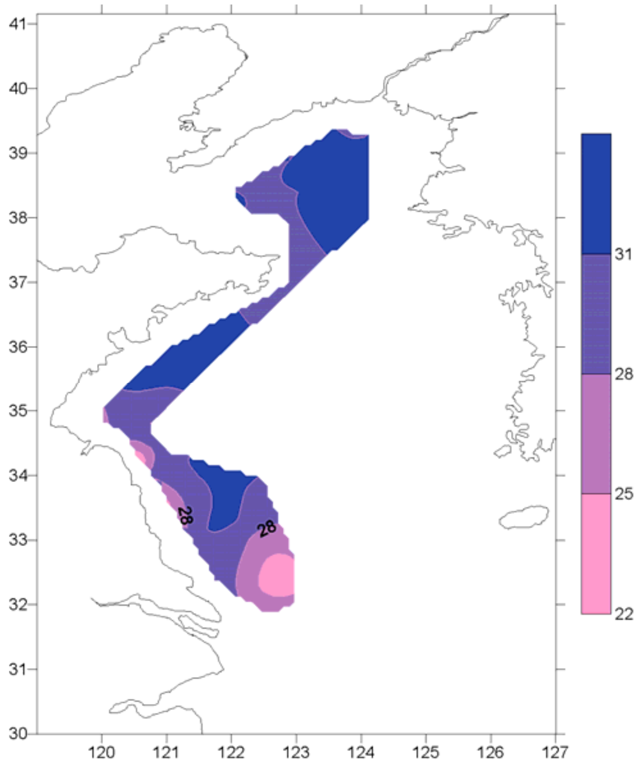


Fig. 3-1-12. Distribution of salinity in the coastal waters of the The Yellow Sea (Aug. 2005)

3.1.3 Variation of dissolved oxygen

Variations of dissolved oxygen content in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig.3-1-13 and Fig.3-1-14. Variations of dissolved oxygen content in the coastal waters of the The Yellow Sea are shown in Fig3-1-15-Fig.3-1-18.

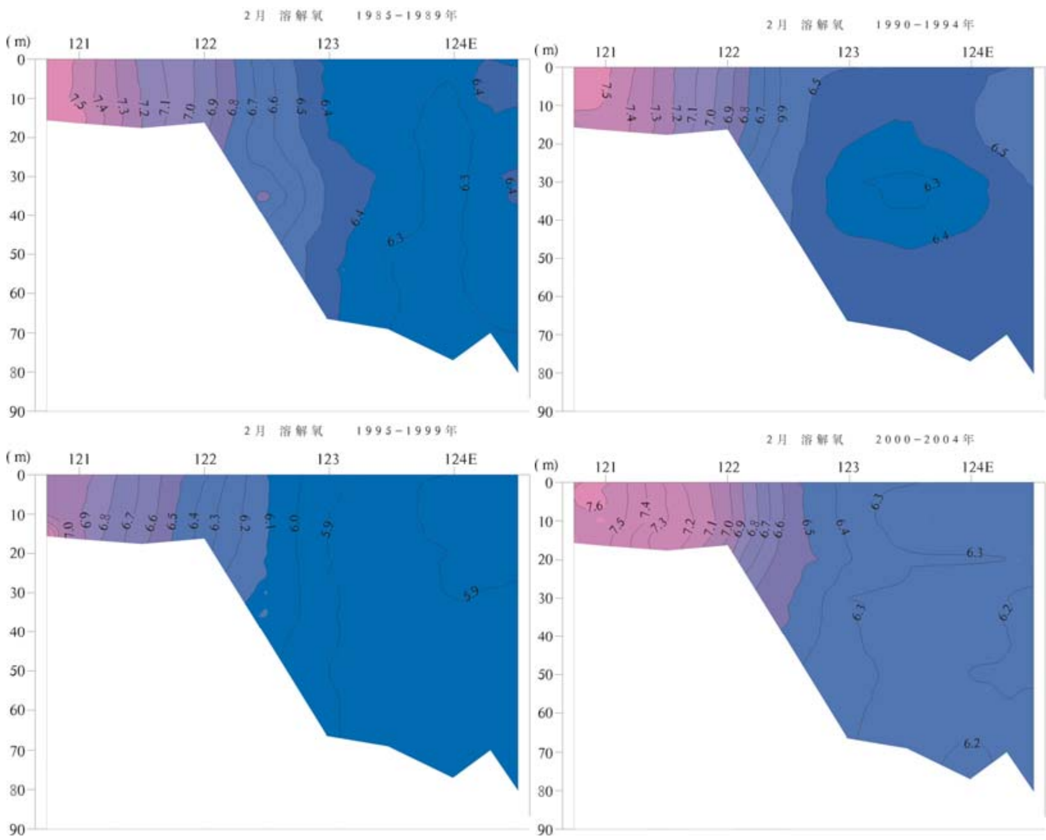


Fig. 3-1-13. Variations of dissolved oxygen content in the the Yellow Sea in recent 20 years (February)

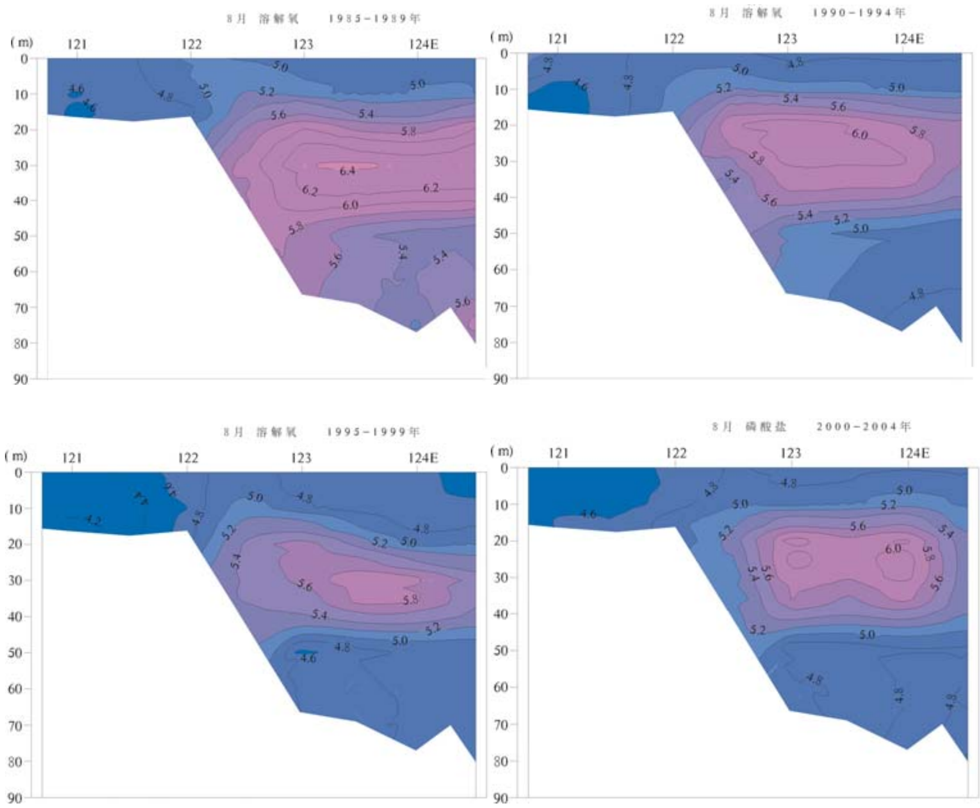


Fig. 3-1-14. Variations of dissolved oxygen content in the The Yellow Sea in recent 20 years (August)

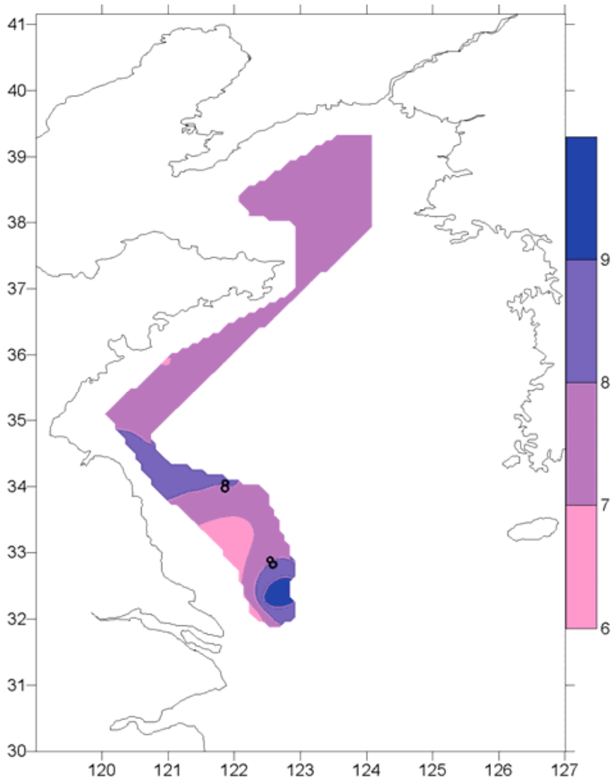


Fig. 3-1-15. Distribution of dissolved oxygen content in the coastal waters of the The Yellow Sea (Aug. 2002)

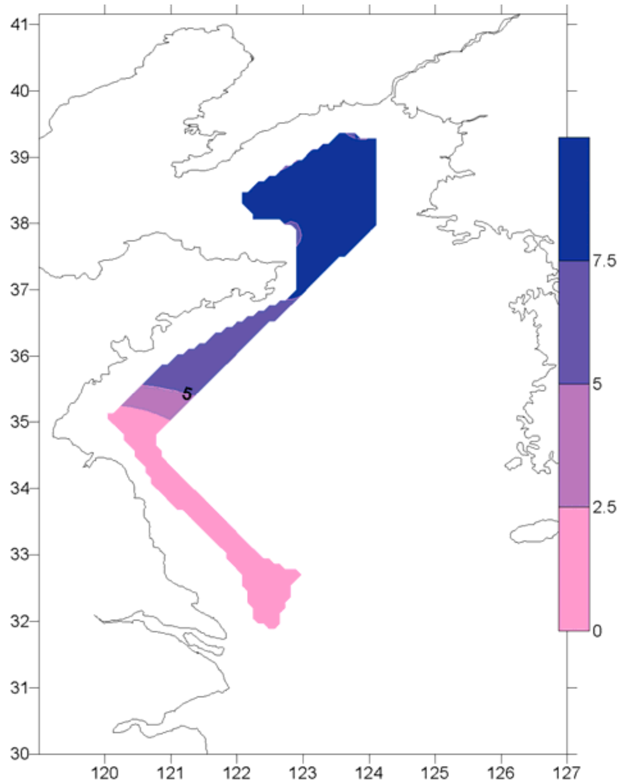


Fig. 3-1-16. Distribution of dissolved oxygen content in the coastal waters of the The Yellow Sea (Aug. 2003)

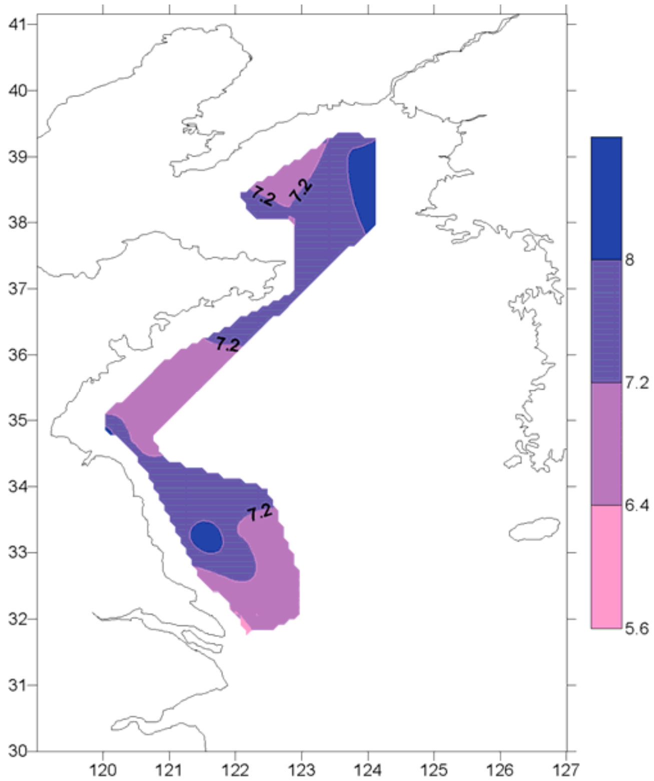


Fig. 3-1-17. Distribution of dissolved oxygen content in the coastal waters of the The Yellow Sea (Aug. 2004)

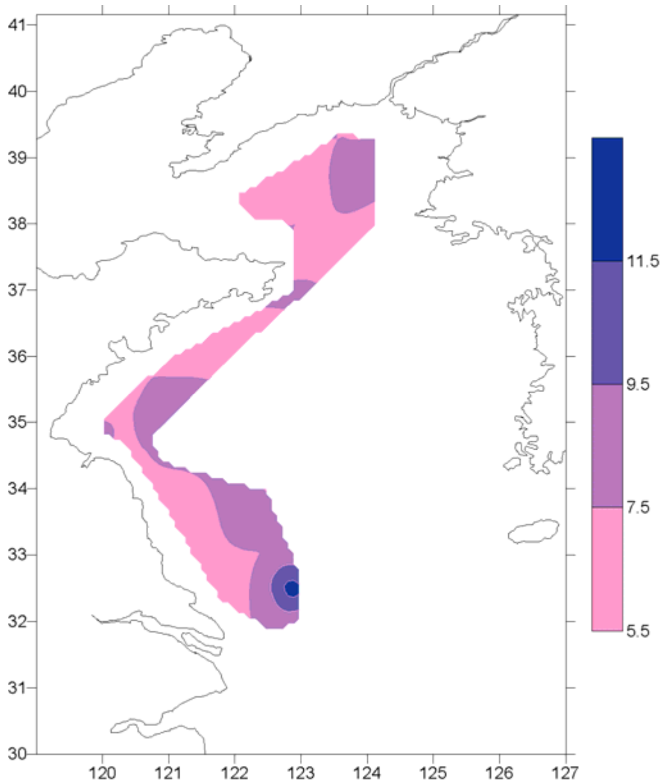


Fig. 3-1-18. Distribution of dissolved oxygen content in the coastal waters of the The Yellow Sea (Aug. 2005)

3.2 Nutrients in the The Yellow Sea

3.2.1 Ammonium

Variations of ammonium content in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig. 3-2-1-Fig. 3-2-2 in recent 15 years. Distribution of ammonium content in the seawater of the The Yellow Sea in autumn 2000 and spring 2001 is shown in Fig. 3-2-3-Fig. 3-2-4. Variations of ammonium content in the coastal waters of the The Yellow Sea in recent years (Fig. 3-2-5-Fig. 3-2-8).

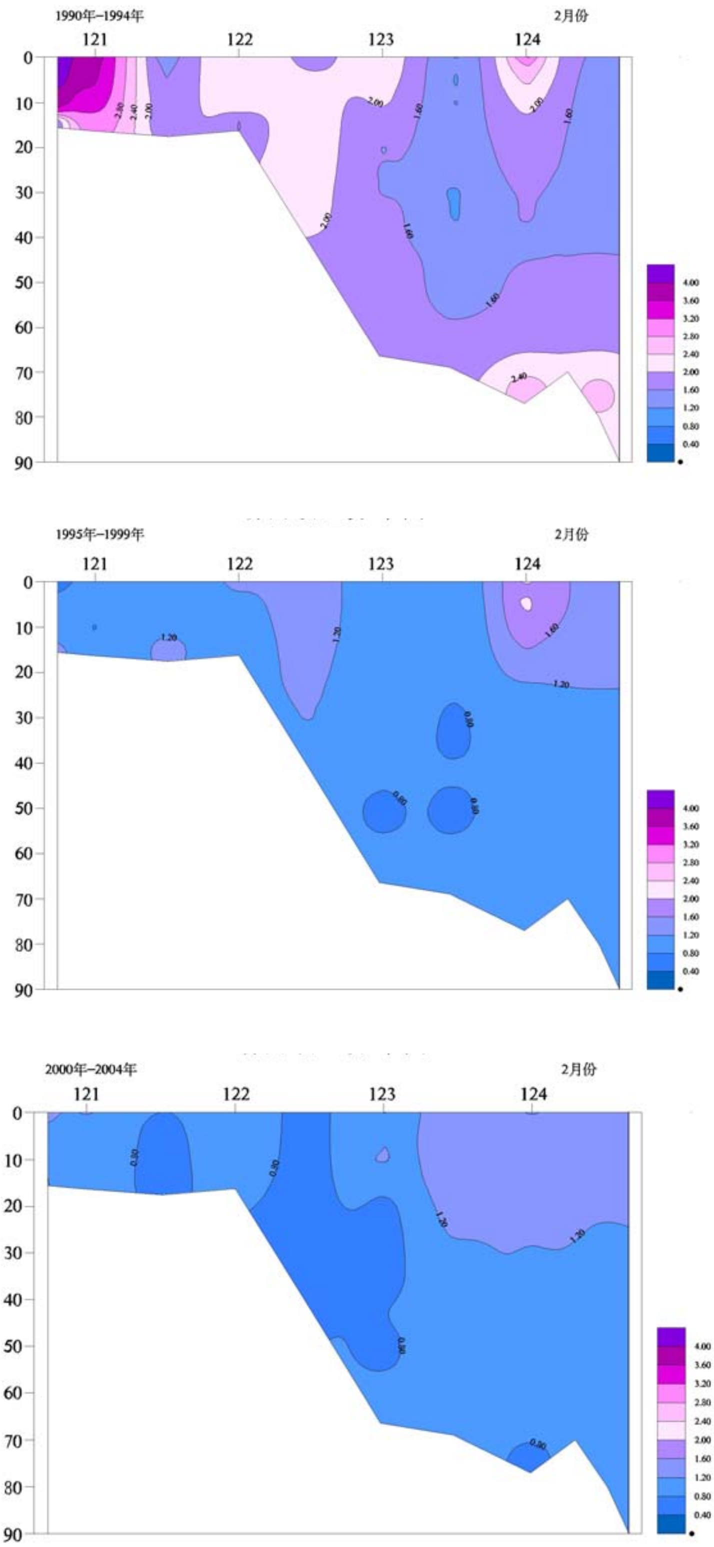


Fig.3-2-1. Variations of ammonium content in the seawater of the The Yellow Sea in recent 15 years (February)

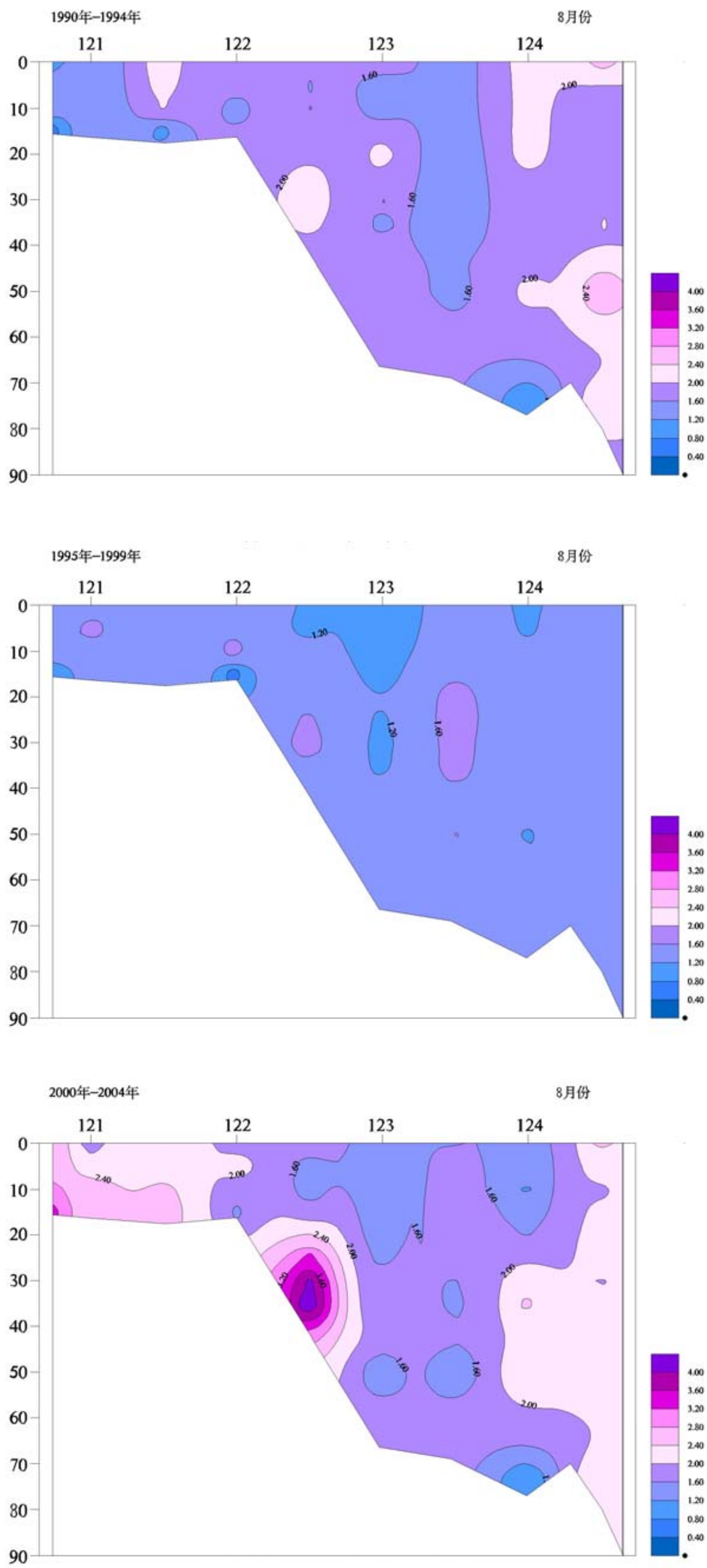


Fig. 3-2-2. Variations of ammonium content in the seawater of the The Yellow Sea in recent 15 years (August)

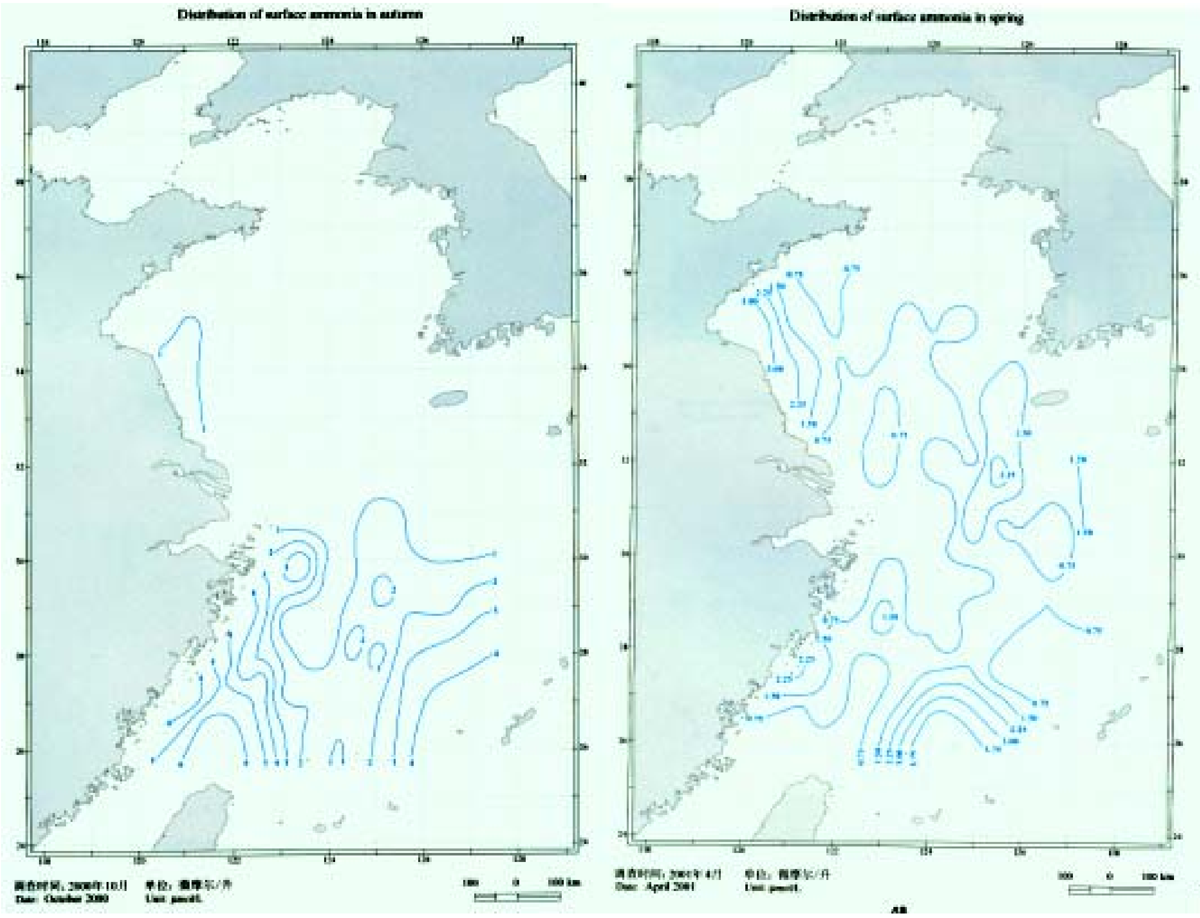


Fig. 3-2-3. Distribution of ammonium content in the seawater of the The Yellow Sea (left: autumn 2000, right: spring 2001)

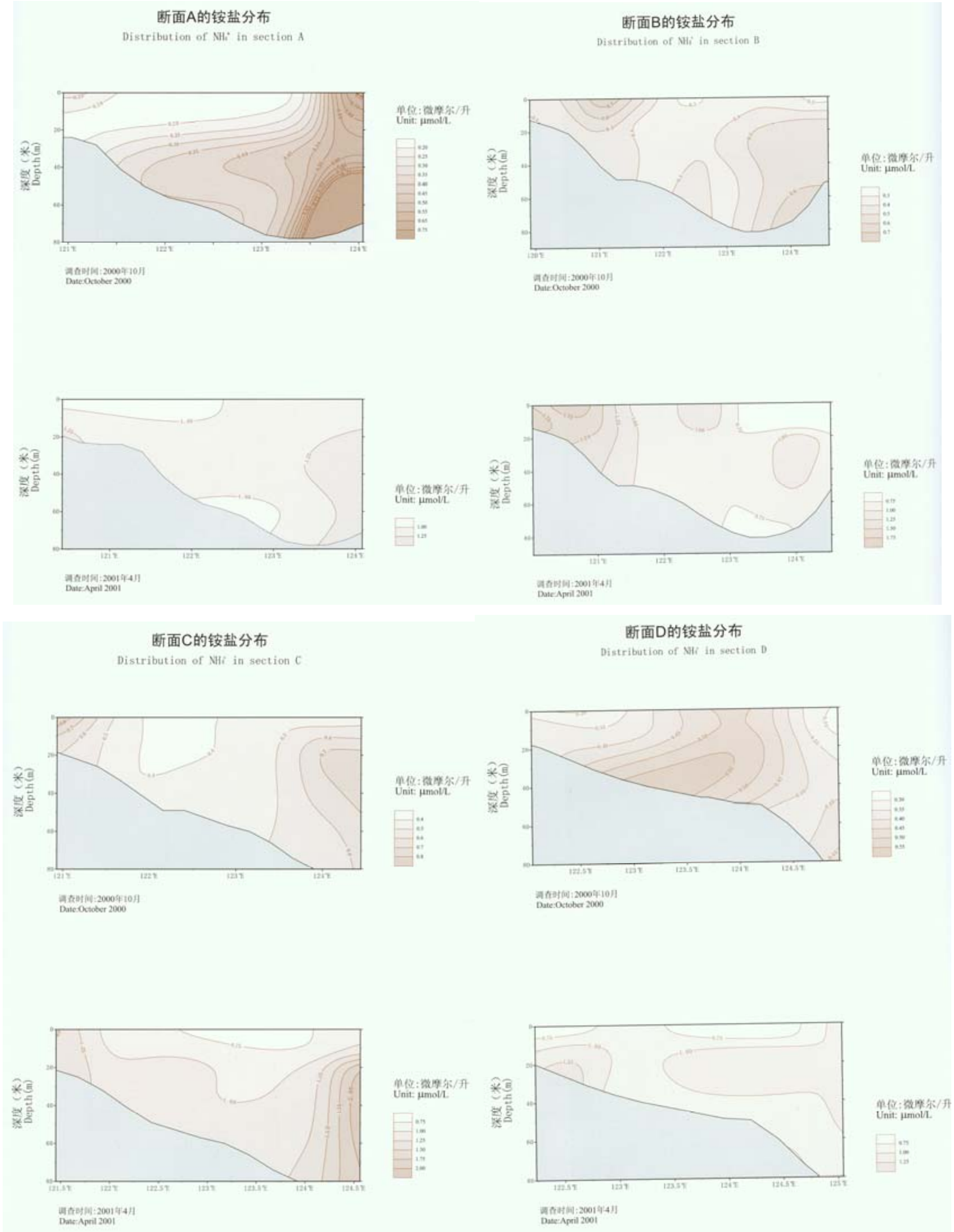


Fig. 3-2-4. Vertical distribution of ammonium content in the seawater of the The Yellow Sea (A: 36°, B: 35°, C: 34°, D:33°)

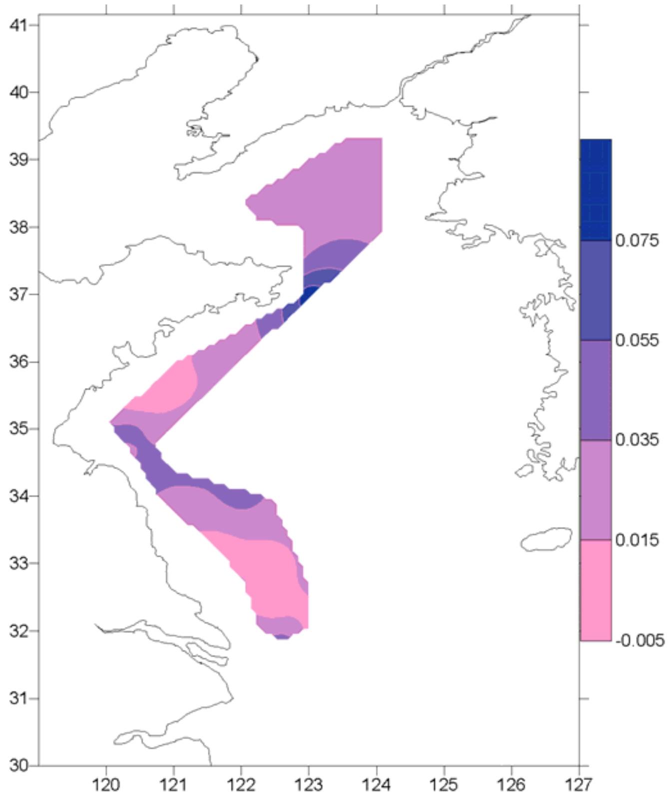


Fig. 3-2-5. Distribution of ammonium content in the coastal waters of the The Yellow Sea, China (Aug. 2002)

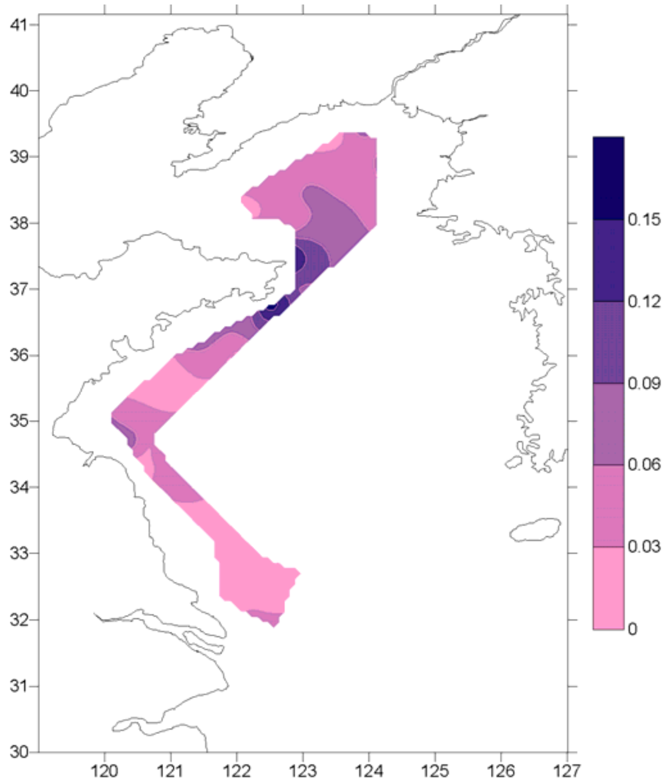


Fig. 3-2-6. Distribution of ammonium content in the coastal waters of the The Yellow Sea, China (Aug. 2003)

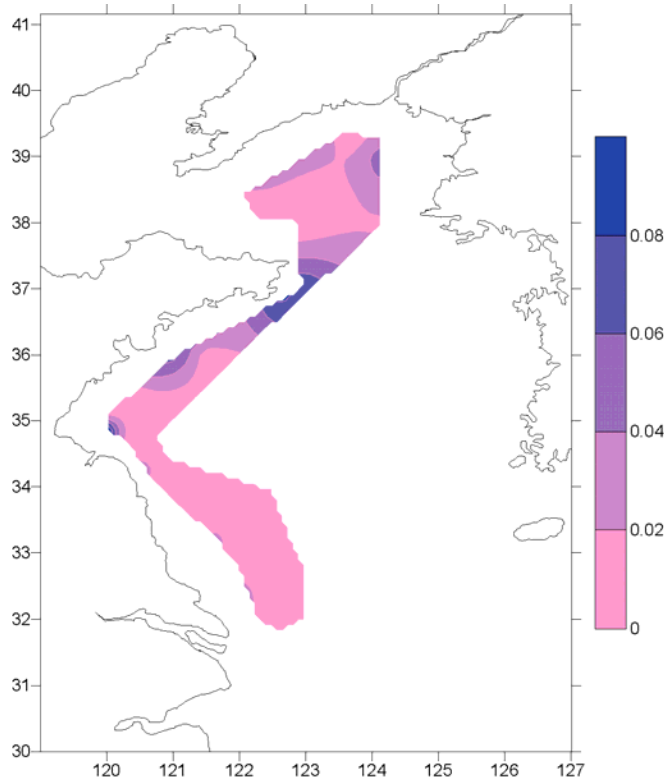


Fig. 3-2-7. Distribution of ammonium content in the coastal waters of the The Yellow Sea, China (Aug. 2004)

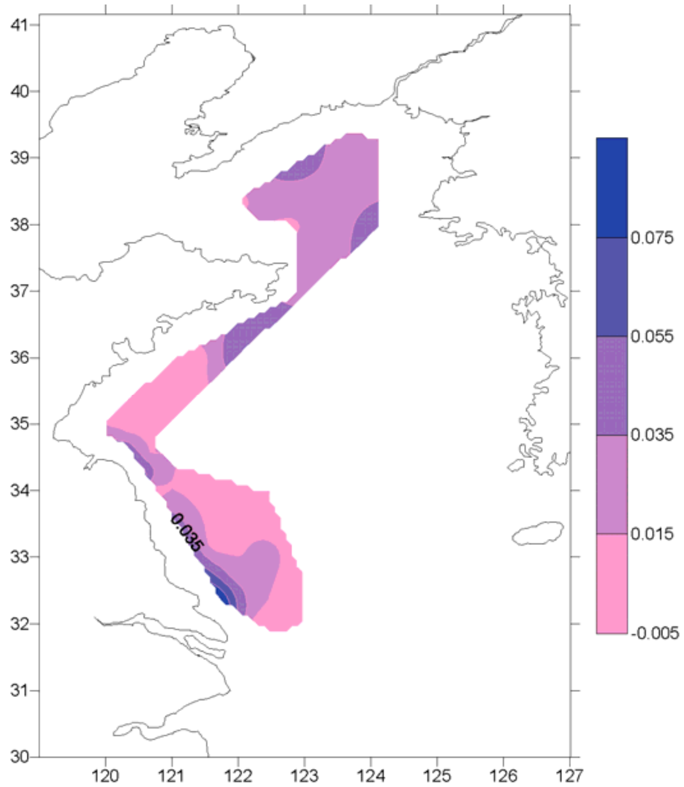


Fig. 3-2-8. Distribution of ammonium content in the coastal waters of the The Yellow Sea, China (Aug. 2005)

3.2.2 Nitrite

Variations of nitrite content in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig. 3-2-9 -Fig.3-2-10 in recent 20 years. Distribution of nitrite content in the seawater of the The Yellow Sea in autumn 2000 and spring 2001 is shown in Fig.3-2-11-Fig.3-2-12. Variations of nitrite content in the coastal waters of the The Yellow Sea in recent years are shown in Fig.3-2-13-Fig.3-2-16.

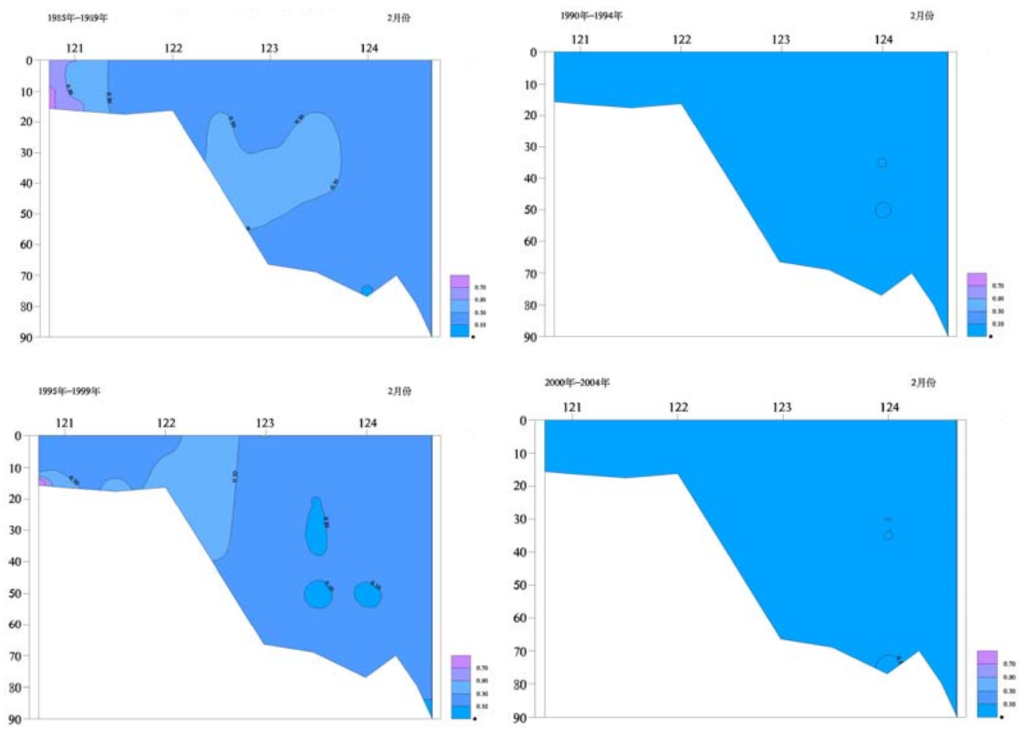


Fig. 3-2-9. Variations of nitrite content in the The Yellow Sea in recent 20 years (February)

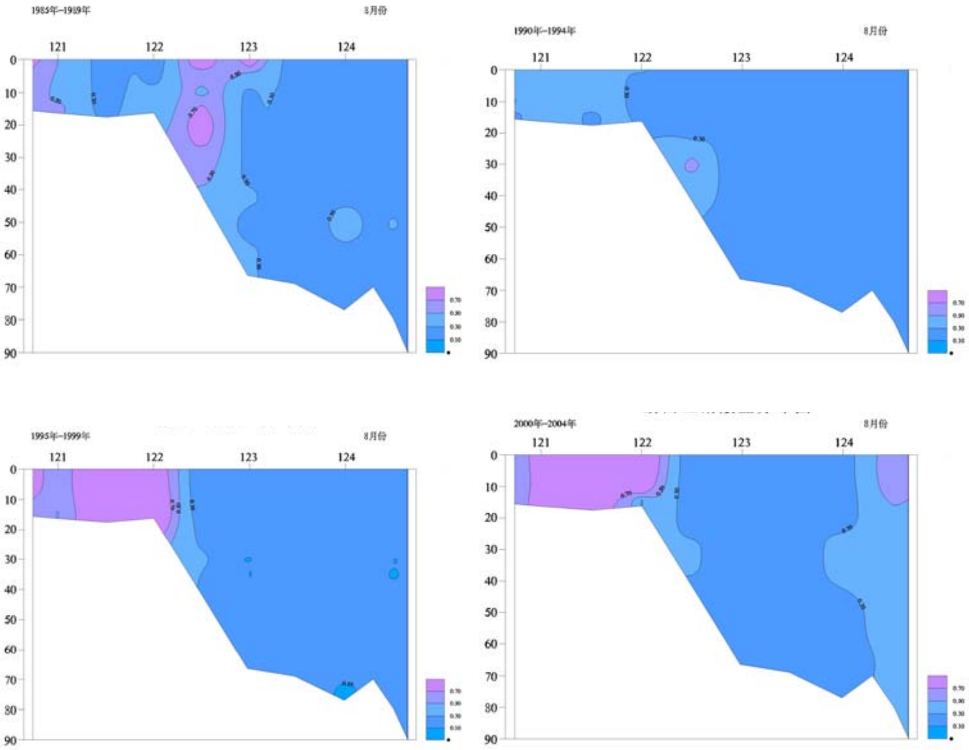


Fig. 3-2-10. Variation of nitrite content in the The Yellow Sea in recent 20 years (August)

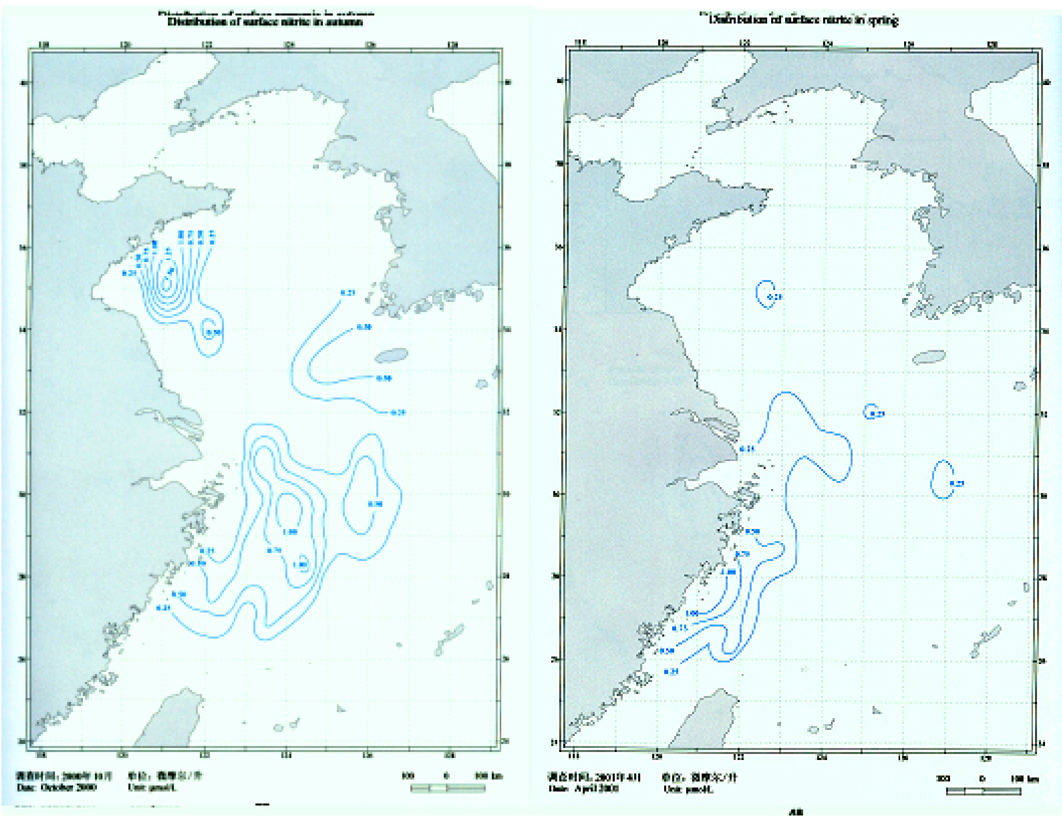
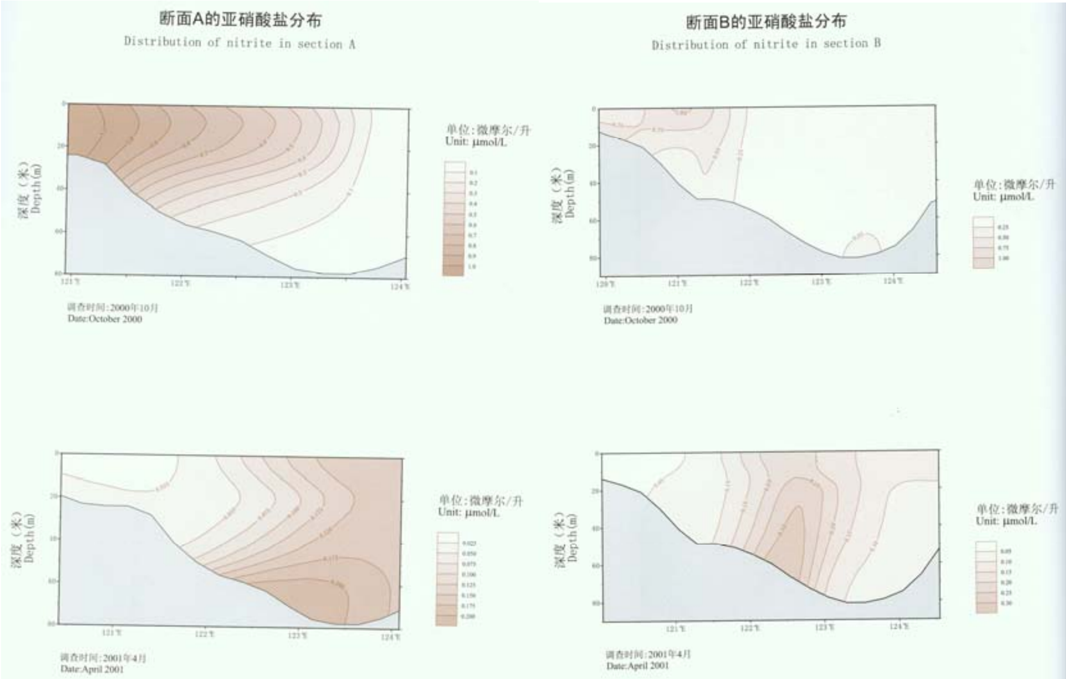


Fig. 3-2-11. Distribution of nitrite content in the surface seawater of the The Yellow Sea (left: autumn 2000, right: spring 2001)



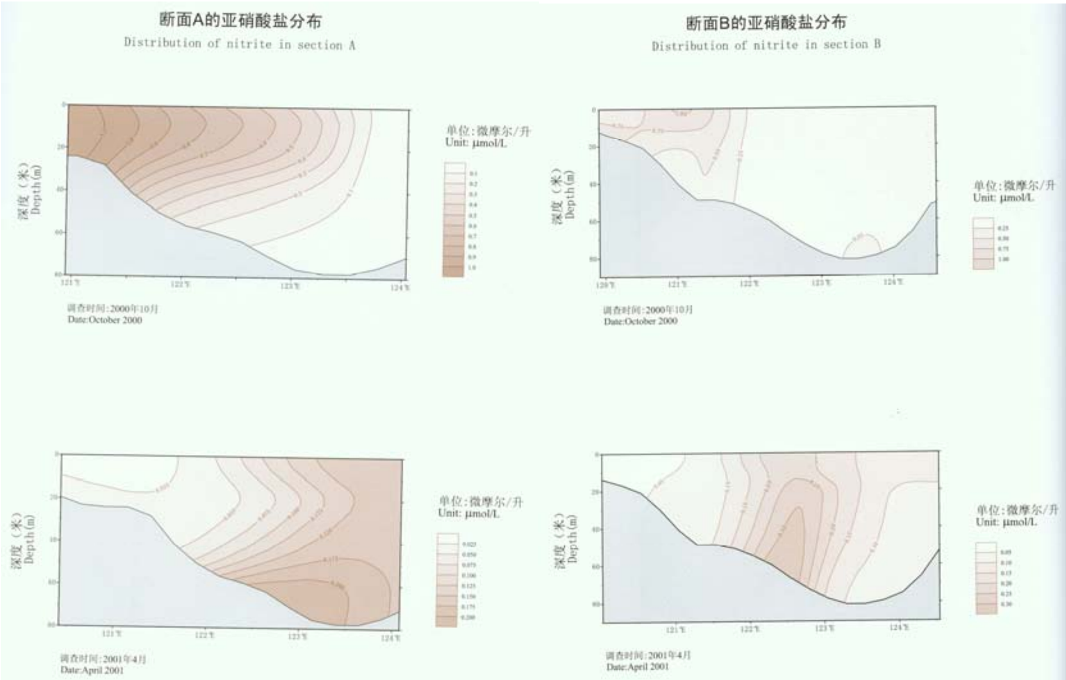


Fig. 3-2-12. Vertical distribution of nitrite content in the surface seawater of the The Yellow Sea (A: 36°, B: 35°, C: 34°, D:33°)

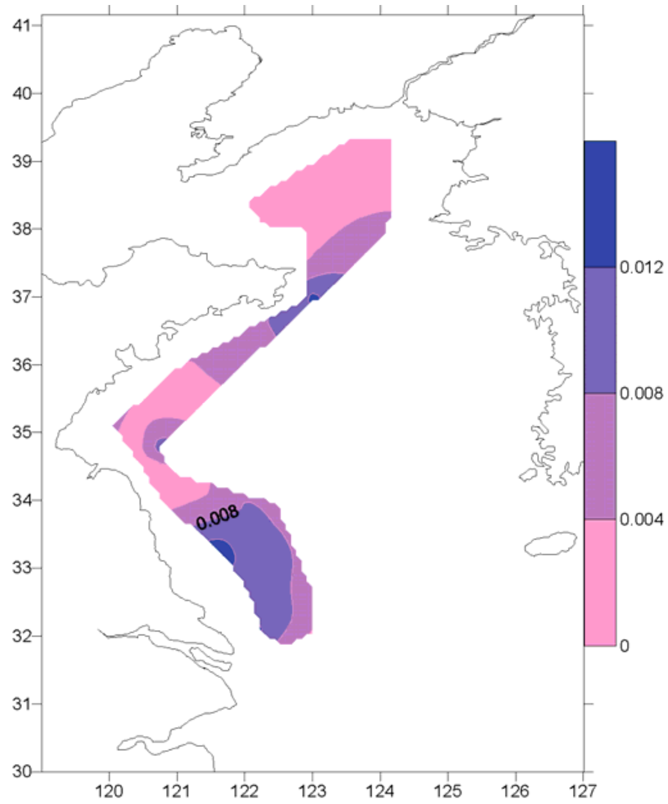


Fig. 3-2-13. Distribution of nitrite content in the coastal waters of the The Yellow Sea, China (Aug. 2002)

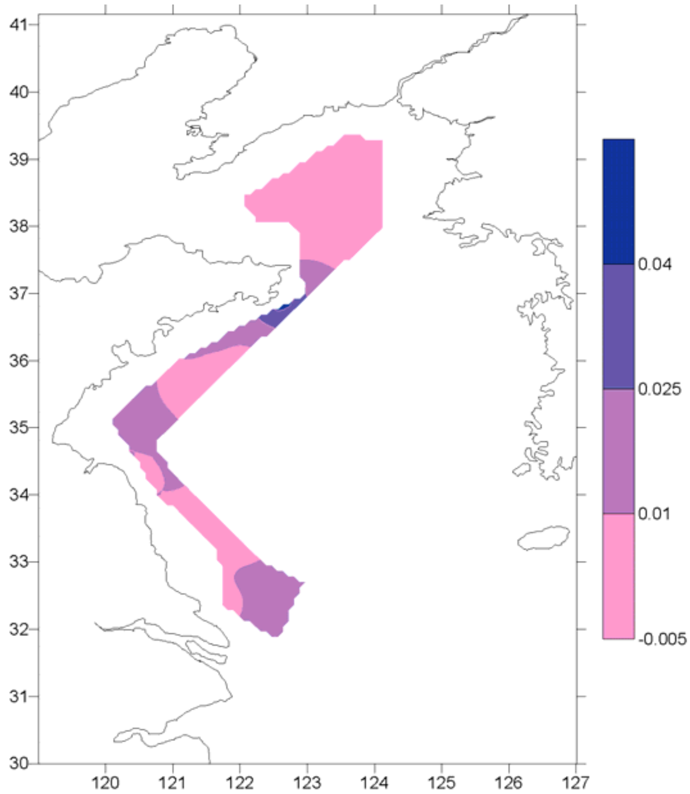


Fig. 3-2-14. Distribution of nitrite content in the coastal waters of the The Yellow Sea, China (Aug. 2003)

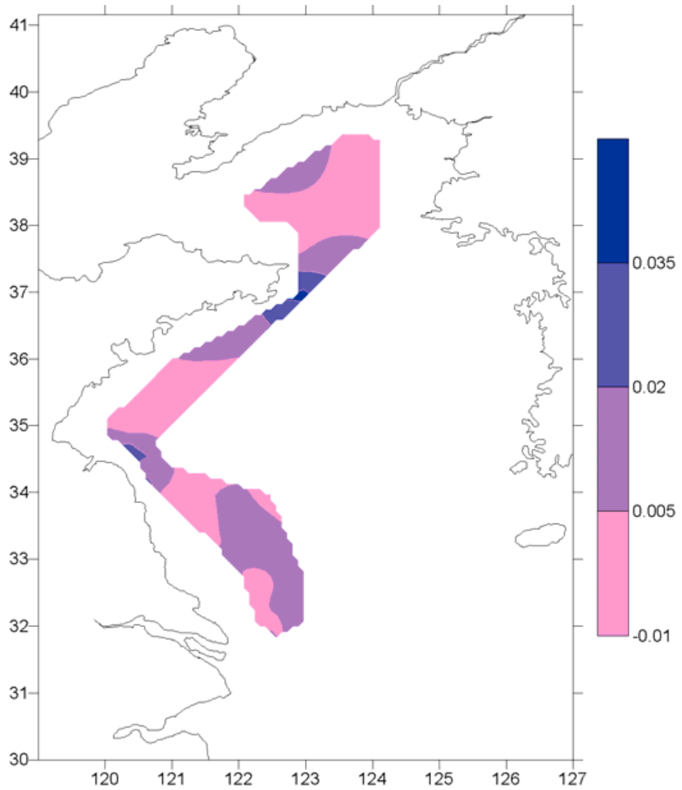


Fig. 3-2-15. Distribution of nitrite content in the coastal waters of the The Yellow Sea, China (Aug. 2004)

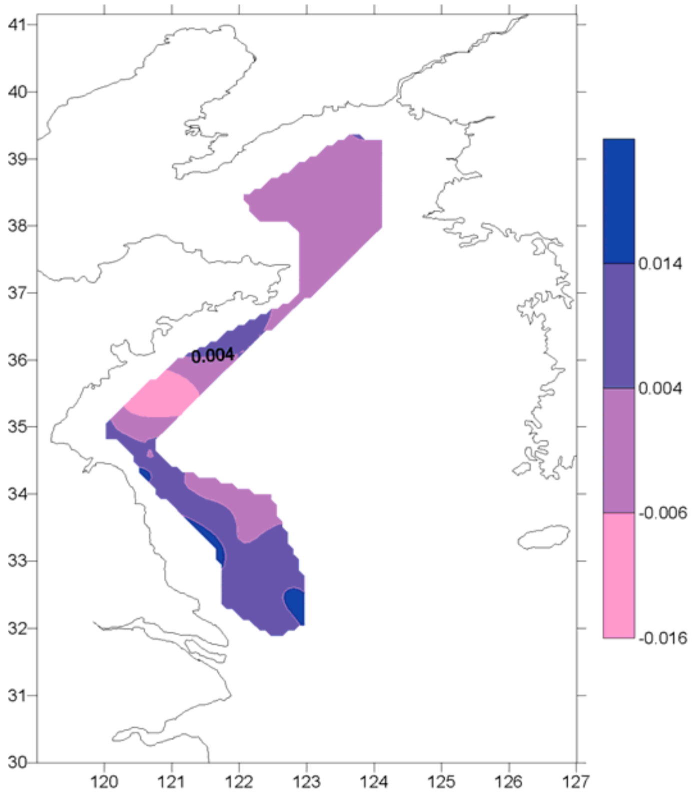


Fig. 3-2-16. Distribution of nitrite content in the coastal waters of the The Yellow Sea, China (Aug. 2005)

3.2.3 Nitrate

Variations of nitrate content in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig. 3-2-17 -Fig.3-2-18 in recent 20 years. Distribution of nitrate content in the seawater of the The Yellow Sea in autumn 2000 and spring 2001 is shown Fig.3-2-19-Fig.3-2-20. Variations of nitrate content in the coastal waters of the The Yellow Sea in recent years, China are shown in Fig.3-2-21-Fig.3-2-24.

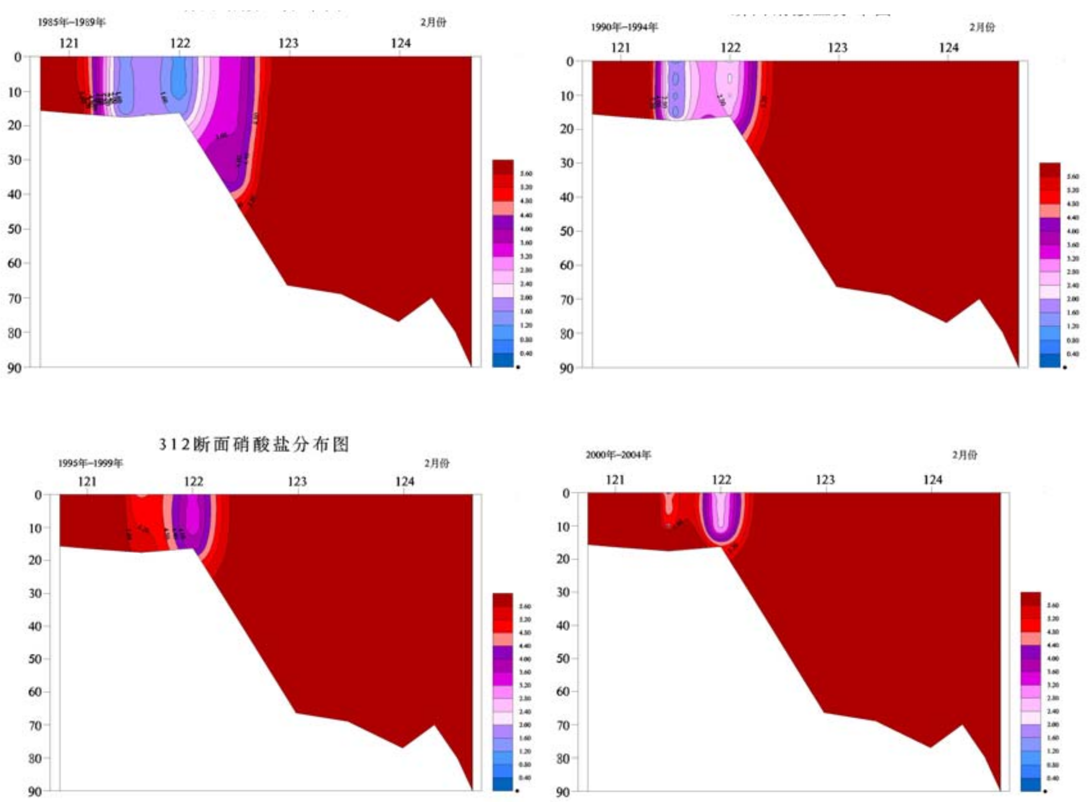


Fig. 3-2-17. Variations of nitrate content in the The Yellow Sea in recent 20 years (February)

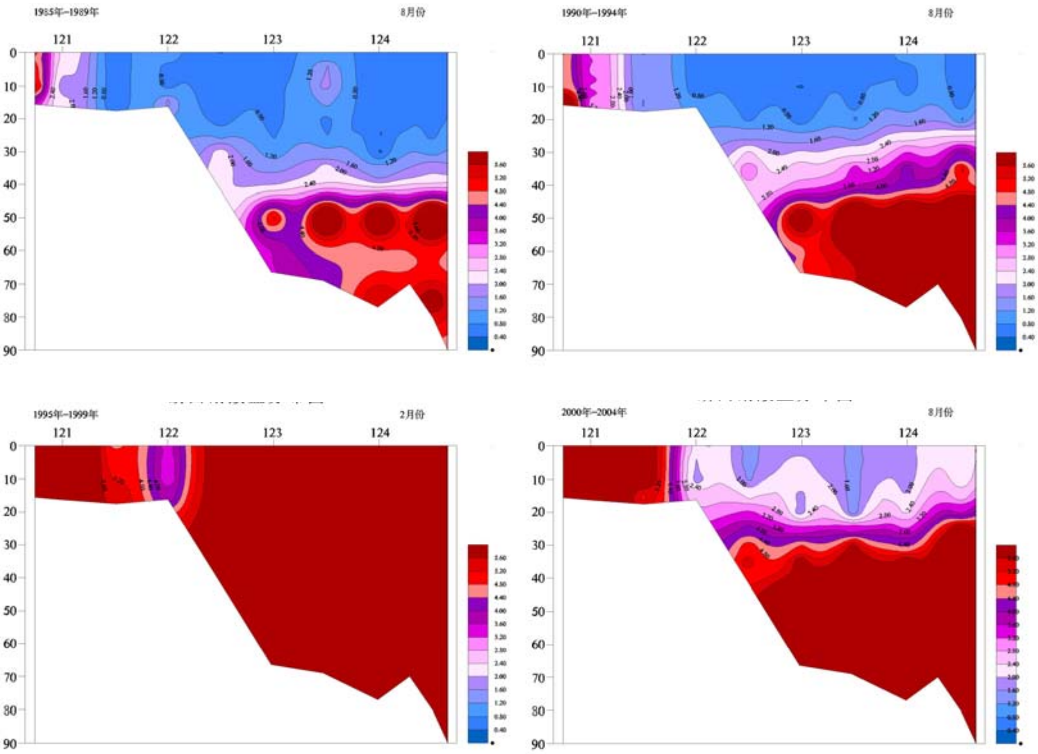


Fig. 3-2-18. Variation of nitrate content in the The Yellow Sea in recent 20 years (August)

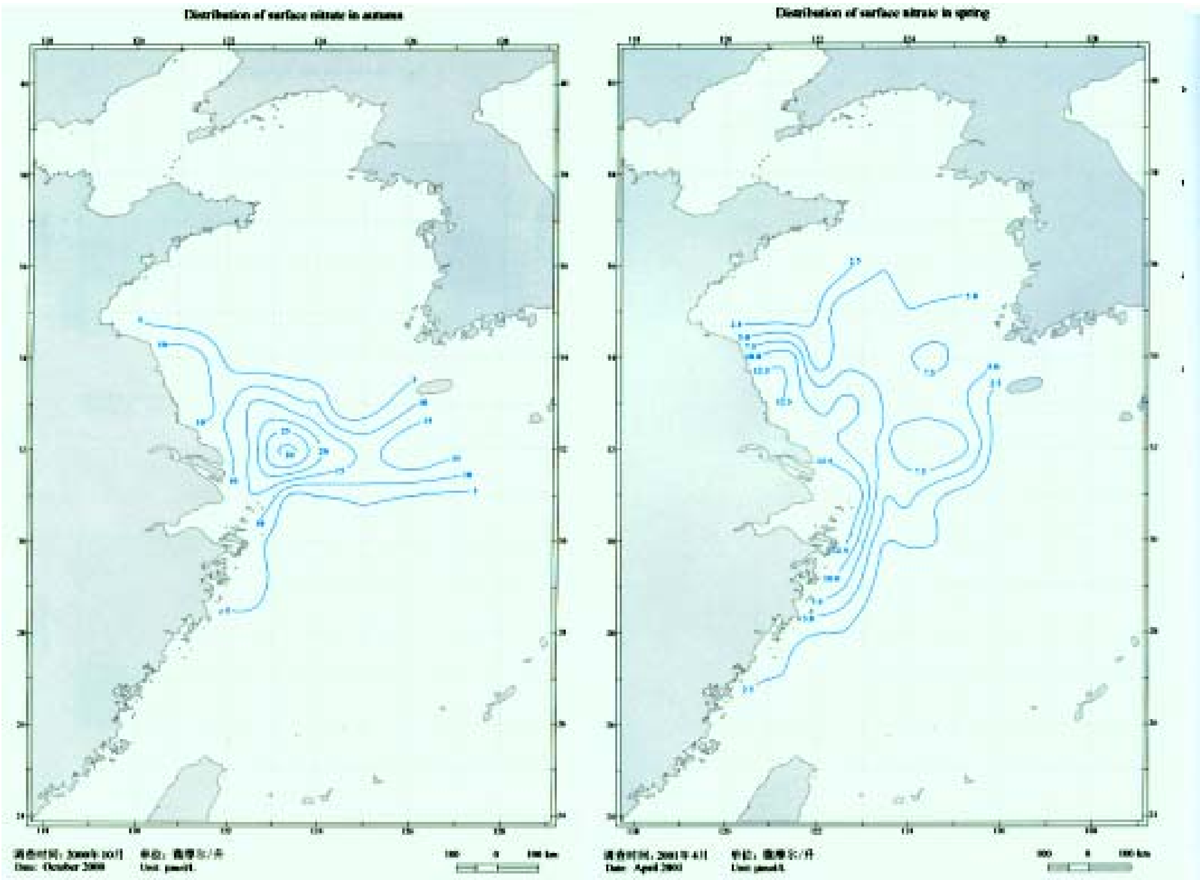


Fig. 3-2-19. Distribution of nitrate content in the surface seawater of the The Yellow Sea (left: autumn 2000, right: spring 2001)

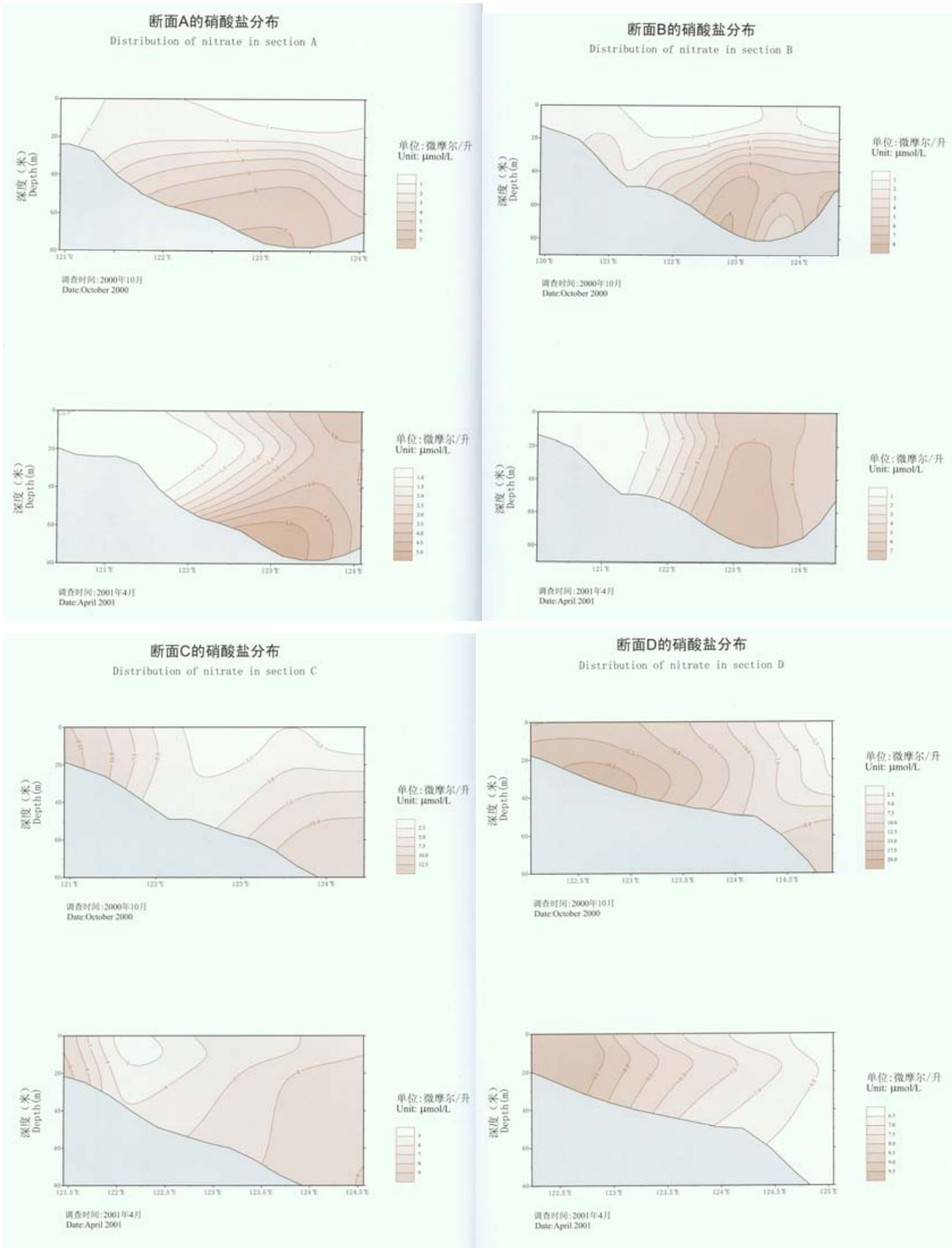


Fig. 3-2-20. Vertical distribution of nitrate content in the surface seawater of the The Yellow Sea (A: 36°, B: 35°, C: 34°, D:33°)

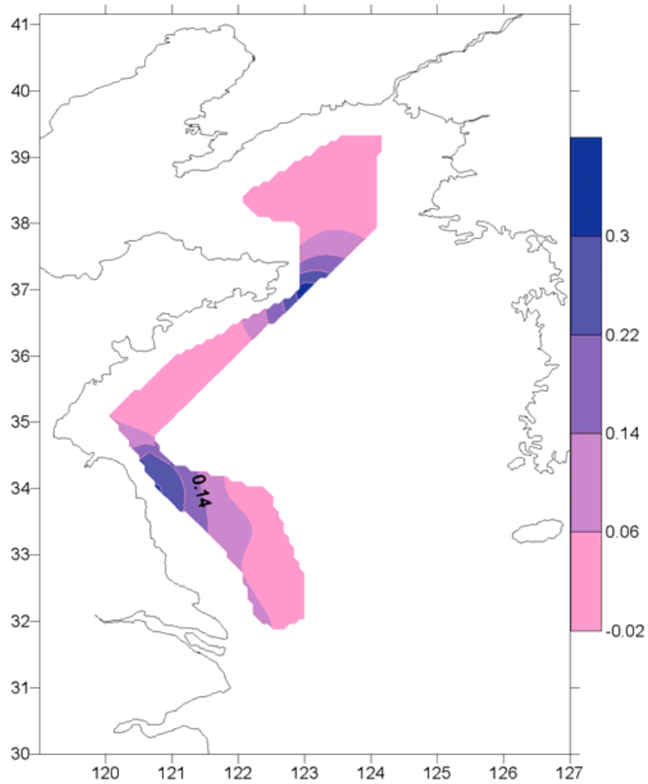


Fig. 3-2-21. Distribution of nitrate content in the coastal waters of the The Yellow Sea, China (Aug. 2002)

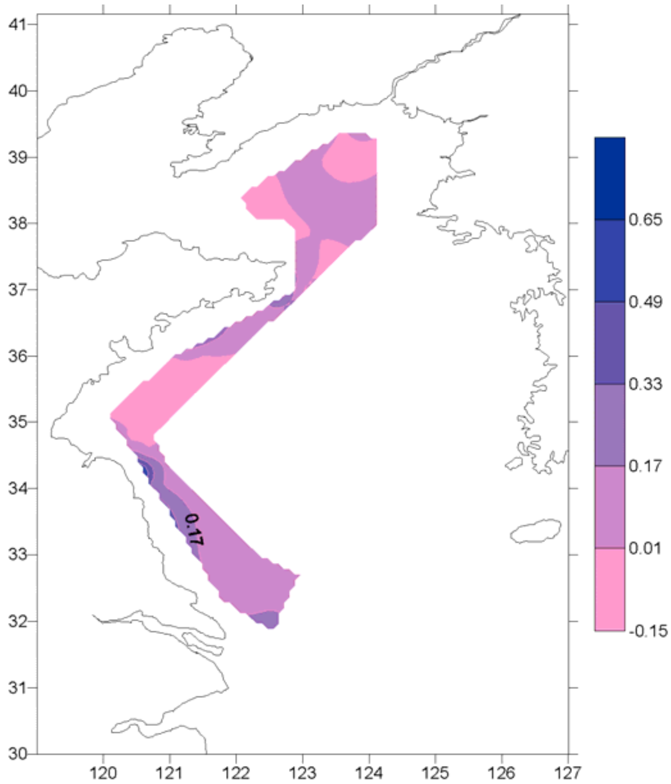


Fig. 3-2-22. Distribution of nitrate content in the coastal waters of the The Yellow Sea, China (Aug. 2003)

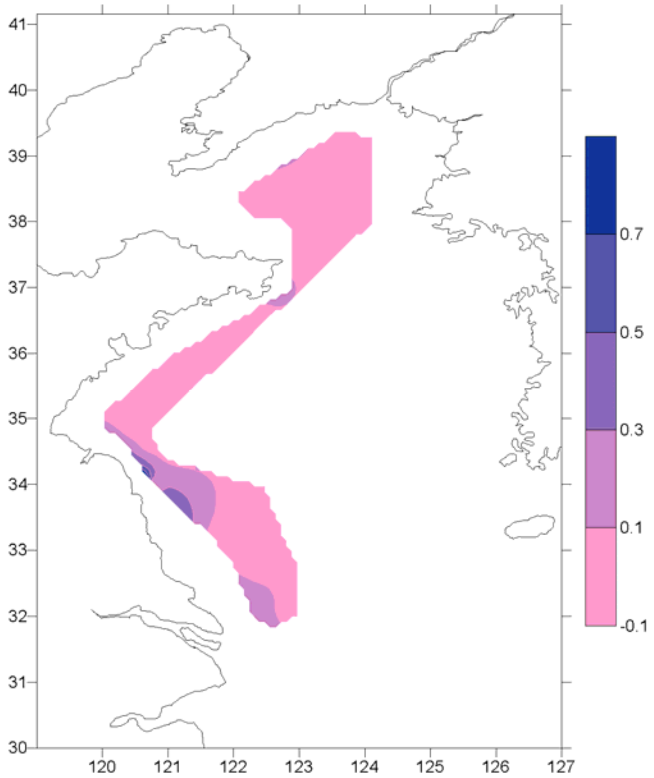


Fig. 3-2-23. Distribution of nitrate content i in the coastal waters of the The Yellow Sea, China (Aug. 2004)

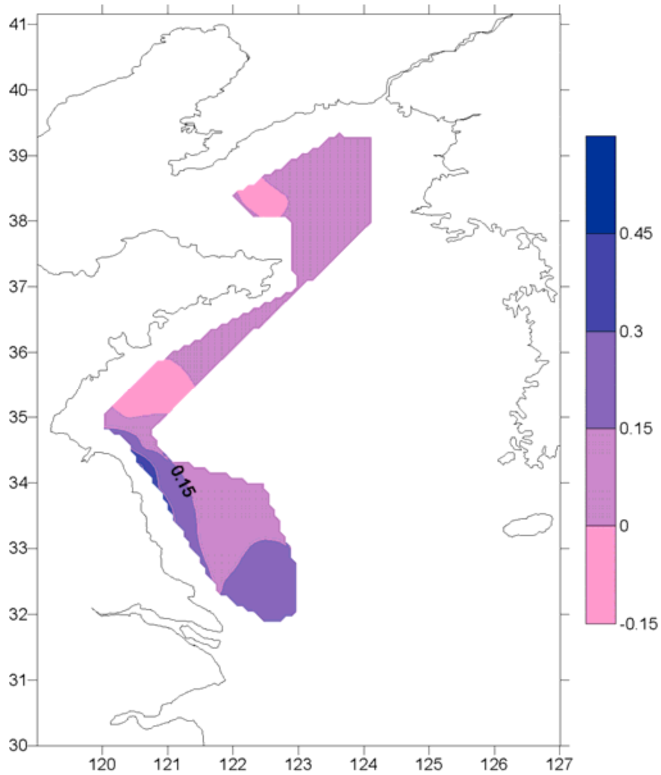


Fig. 3-2-24. Distribution of nitrate content in the coastal waters of the The Yellow Sea, China (Aug. 2005)

3.2.4 Phosphate

Variations of phosphate content in the section located in thirty and four degrees north latitude in the The Yellow Sea is shown in Fig.3-2-25 -Fig.3-2-26 in recent 20 years. Distribution of phosphate content in the seawater of the The Yellow Sea of in autumn 2000 and spring 2001 is shown in Fig.3-2-27-Fig.3-2-28. Variations of phosphate content in the coastal waters of the The Yellow Sea in recent years, China are shown in Fig.3-2-29-Fig.3-2-32.

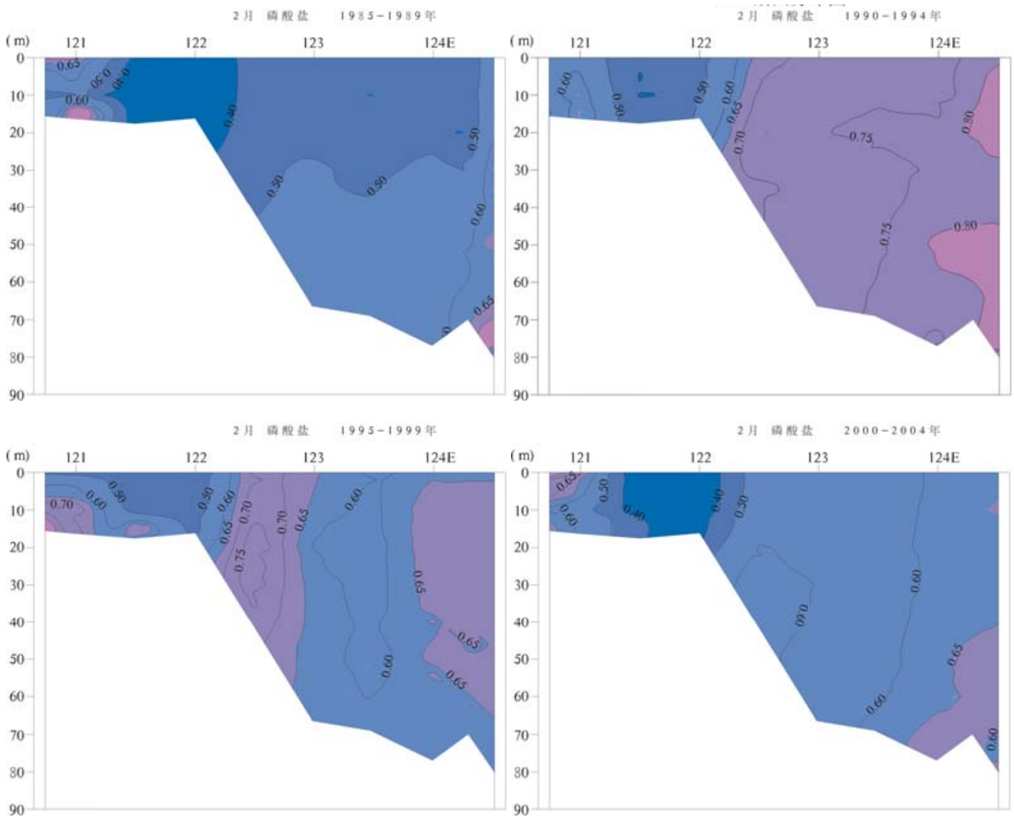


Fig. 3-2-25. Variations of phosphate content in the The Yellow Sea in recent 20 years (February)

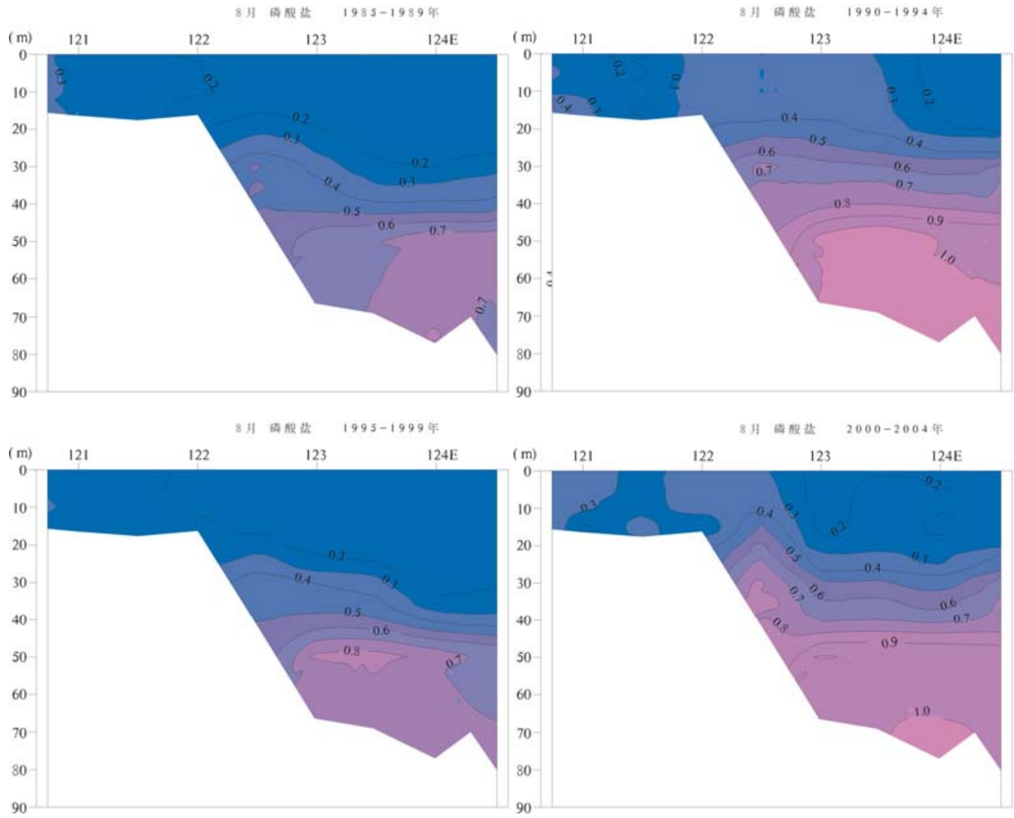


Fig. 3-2-26. Variations of phosphate content in the The Yellow Sea in recent 20 years (August)

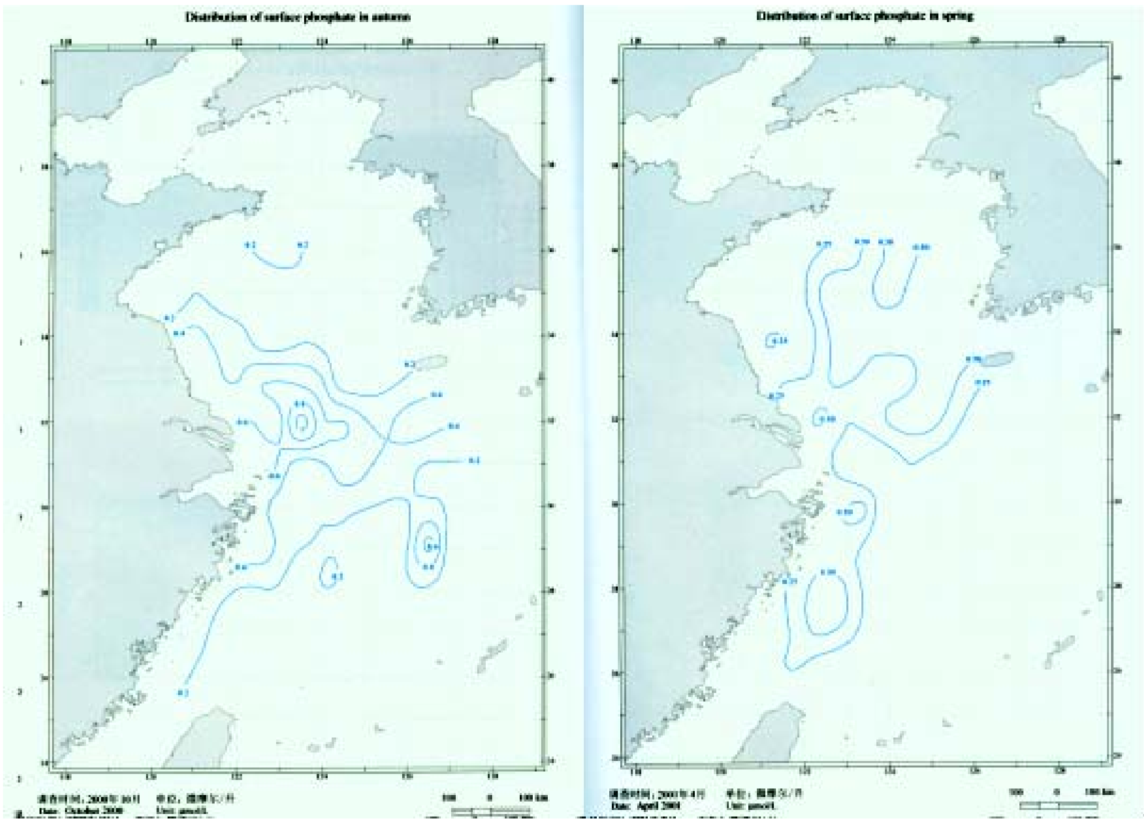


Fig. 3-2-27. Distribution of phosphate content in the surface seawater of the The Yellow Sea (left: autumn 2000, right: spring 2001)

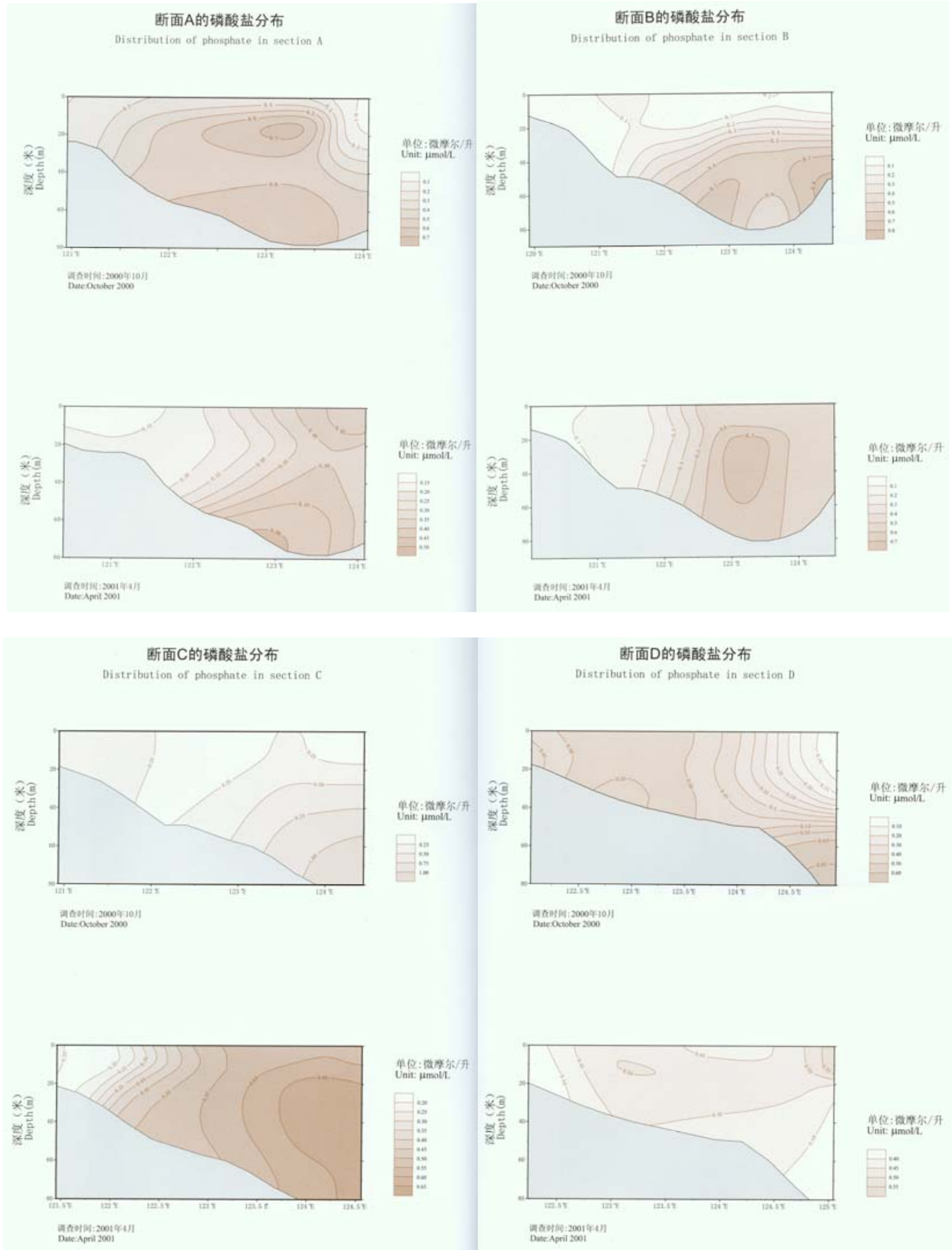


Fig. 3-2-28. Vertical distribution of phosphate content in the seawater of the The Yellow Sea (A: 36°, B: 35°, C: 34°, D:33°)

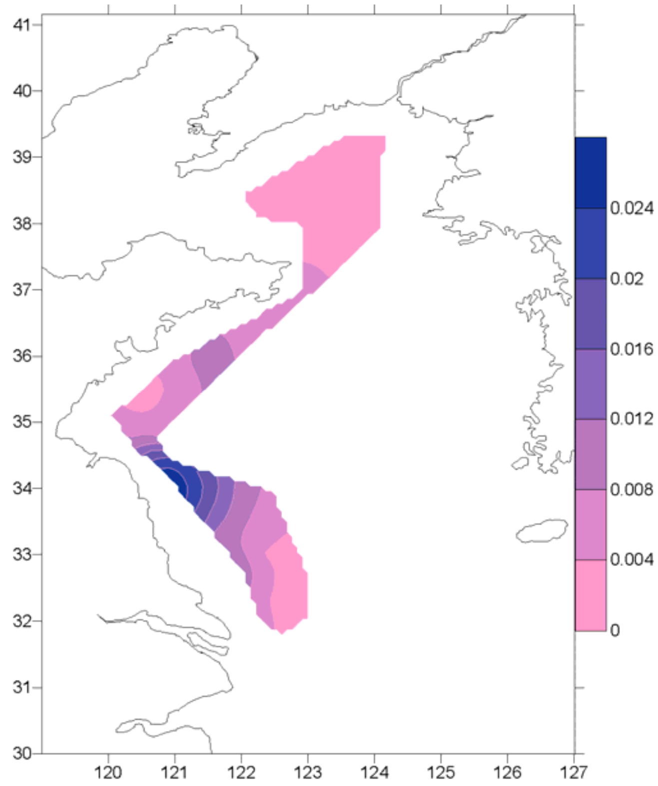


Fig. 3-2-29. Distribution of phosphate content in the coastal waters of the The Yellow Sea, China (Aug. 2002)

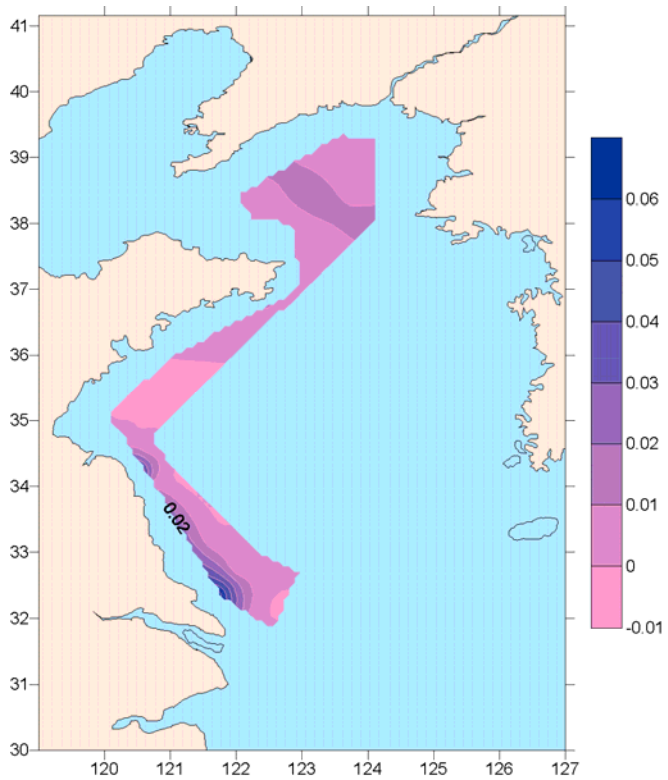


Fig. 3-2-30. Distribution of phosphate content in the coastal waters of the The Yellow Sea, China (Aug. 2003)

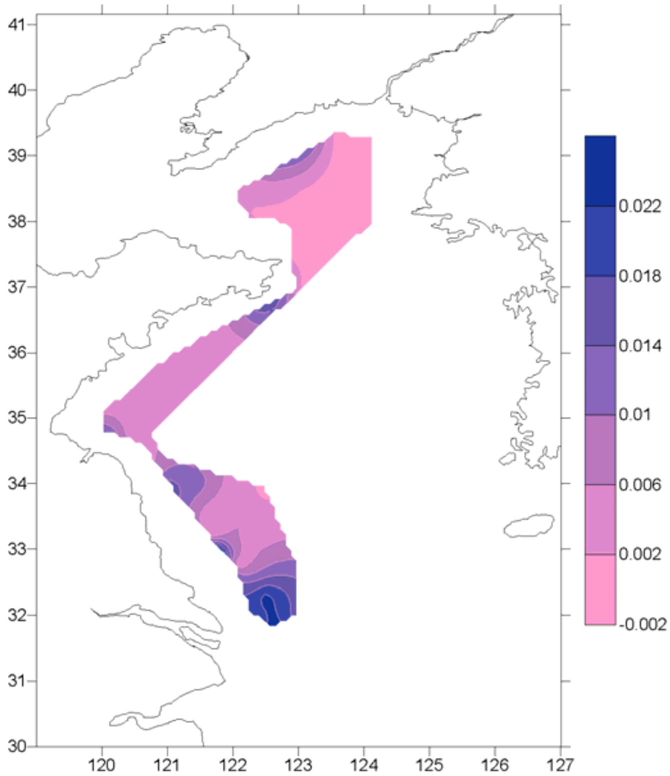


Fig. 3-2-31. Distribution of phosphate content in the coastal waters of the The Yellow Sea, China (Aug. 2004)

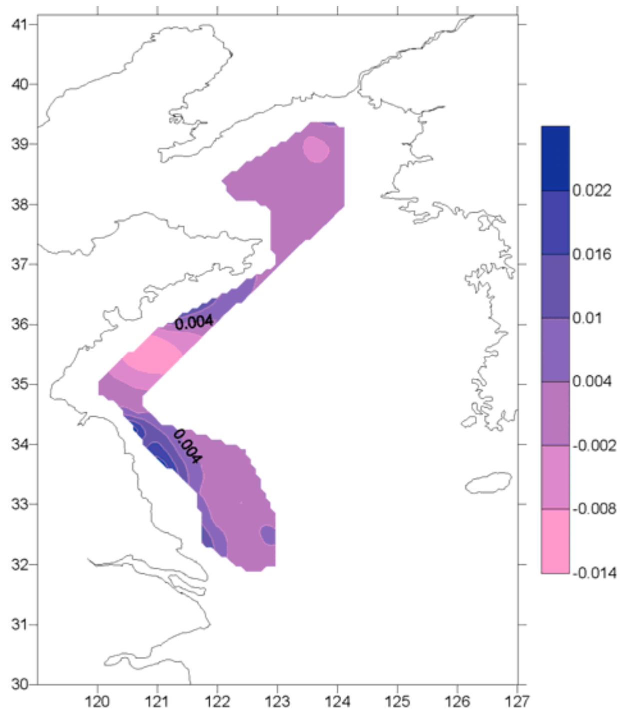


Fig. 3-2-32. Distribution of phosphate content in the coastal waters of the The Yellow Sea, China (Aug. 2005)

3.2.5 Silicate

Variations of silicate content in the section located in thirty and four degrees north latitude in the The Yellow Sea are shown in Fig. 3-2-33 -Fig.3-2-34 in recent 20 years.

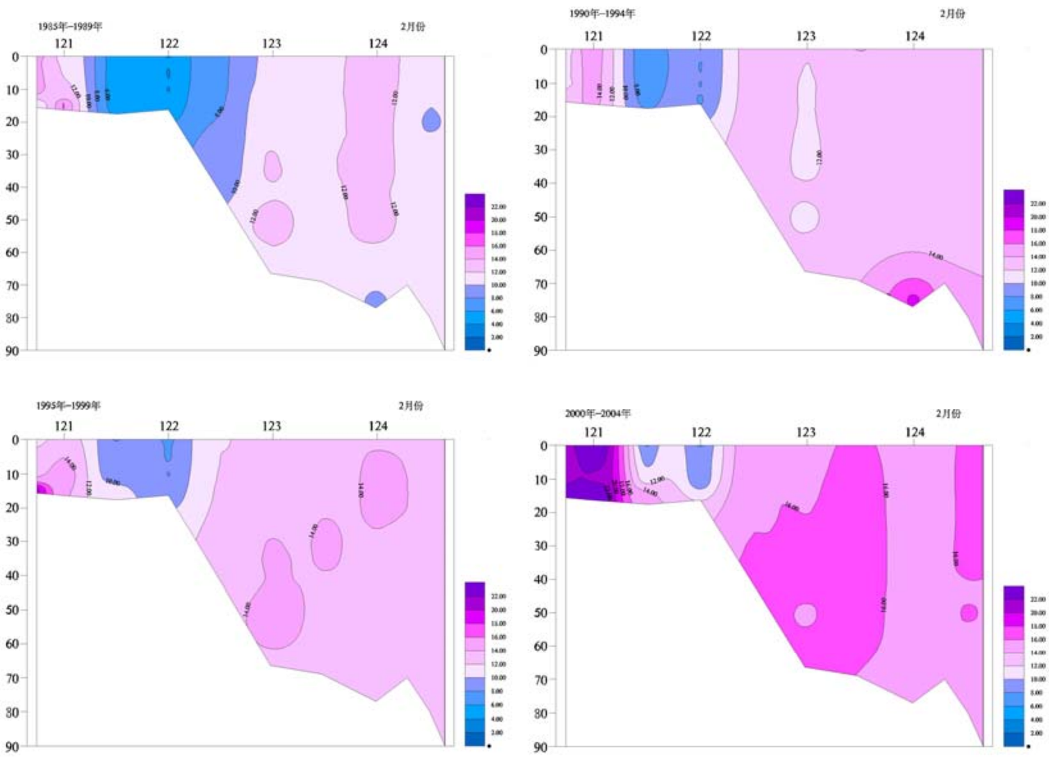


Fig. 3-2-33. Variations of silicate content in the The Yellow Sea in recent 20 years (February)

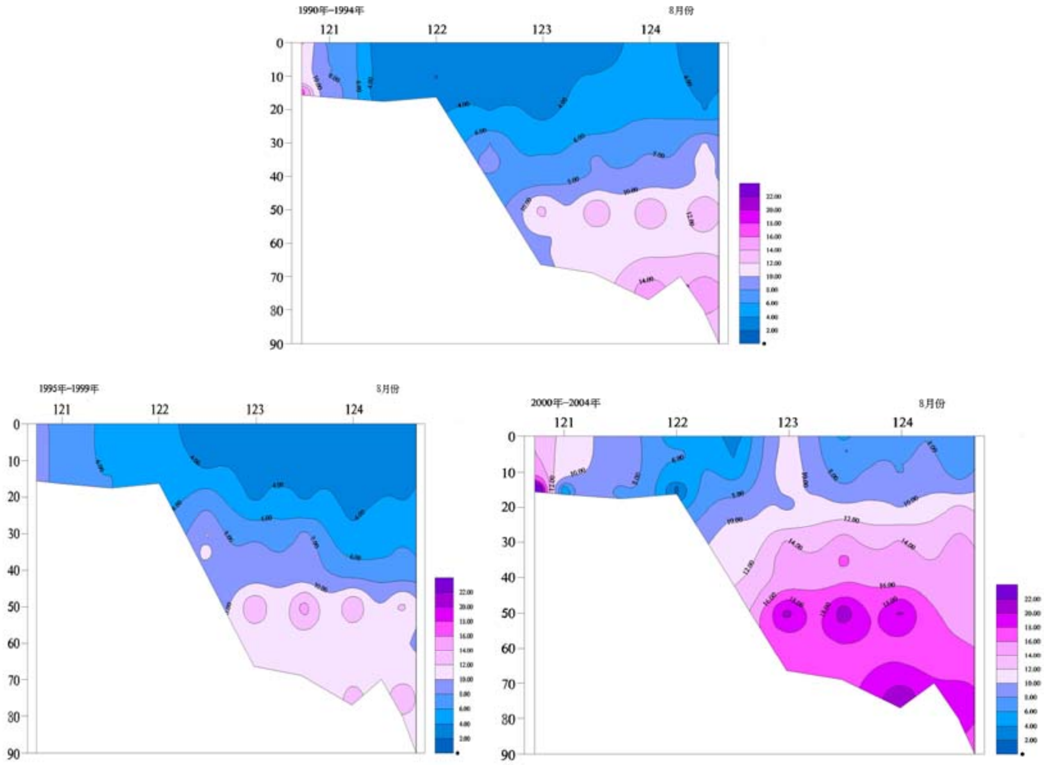


Fig. 3-2-34. Variations of silicate content in the The Yellow Sea in recent 20 years (August)

Distribution of silicate content in the seawater of the The Yellow Sea in autumn 2000 and spring 2001 is shown in Fig.3-2-35-Fig.3-2-36.

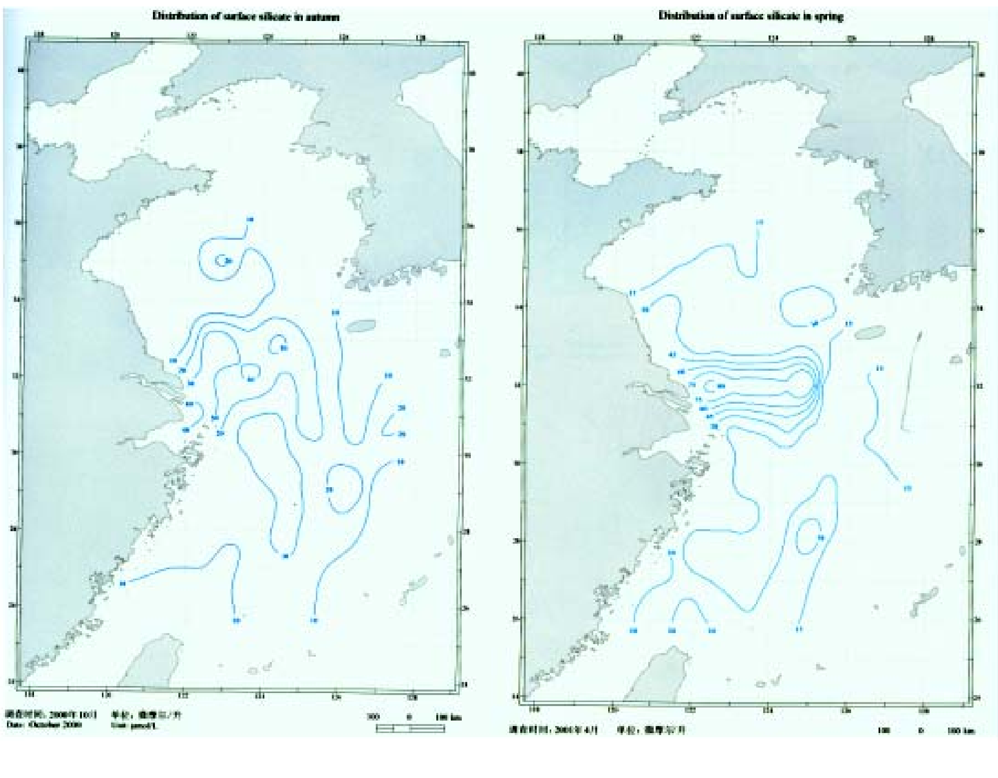


Fig. 3-2-35. Distribution of silicate content in the surface seawater of the The Yellow Sea (left: autumn 2000, right: spring 2001)

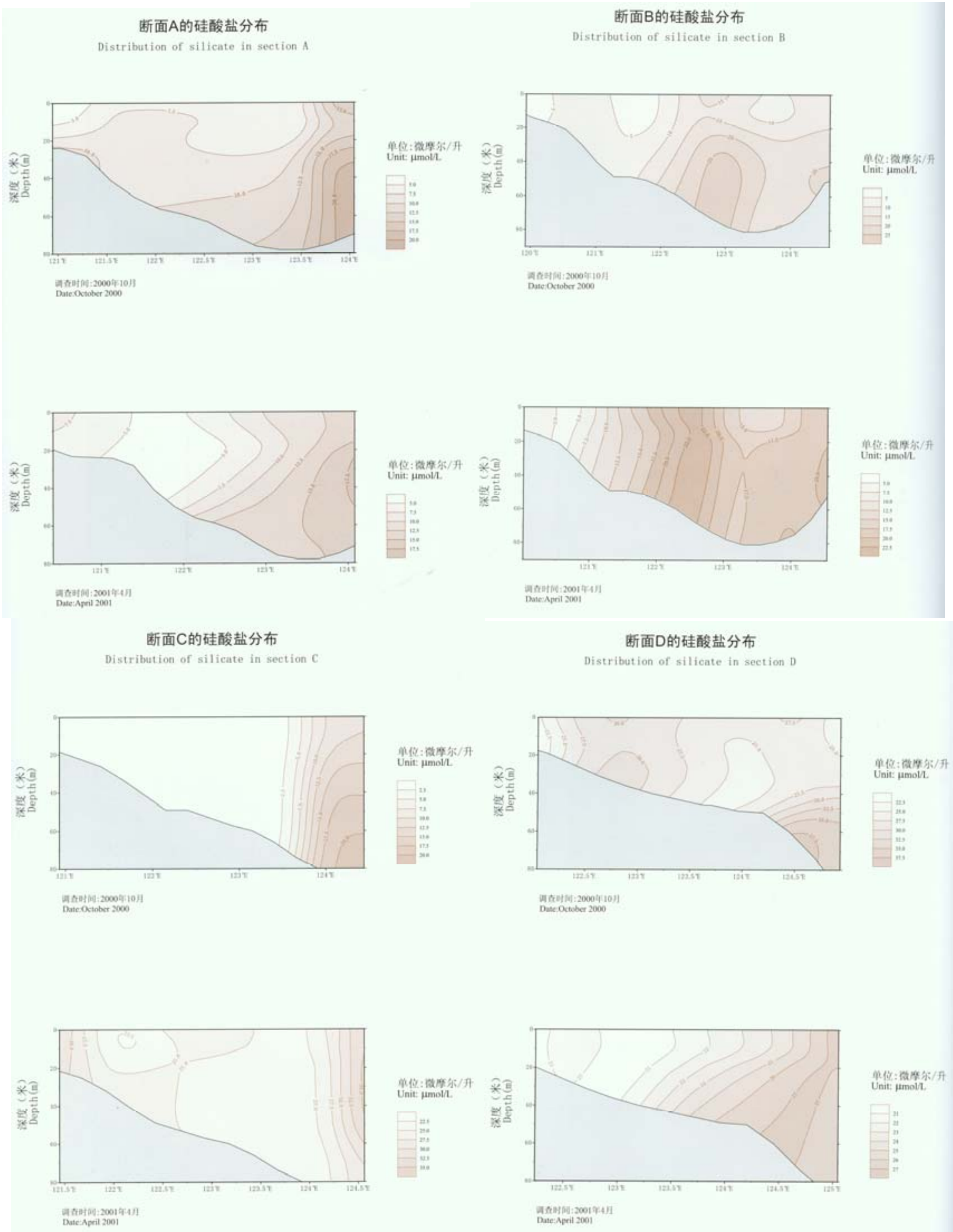


Fig. 3-2-36. Vertical distribution of silicate content in the seawater of the The Yellow Sea (A: 36°, B: 35°, C: 34°, D:33°)

3.2.6 Variation tendency

(1) Variation tendency of nutrients in the section located in thirty and four degrees north latitude in the The Yellow Sea is shown in Fig. 3-2-37 ~ Fig. 3-2-41.

(2) Variation tendency of nutrients in the section from the Changjiang river estuary to the Chejudo Island is shown in Fig. 3-2-42 ~ Fig. 3-2-43.

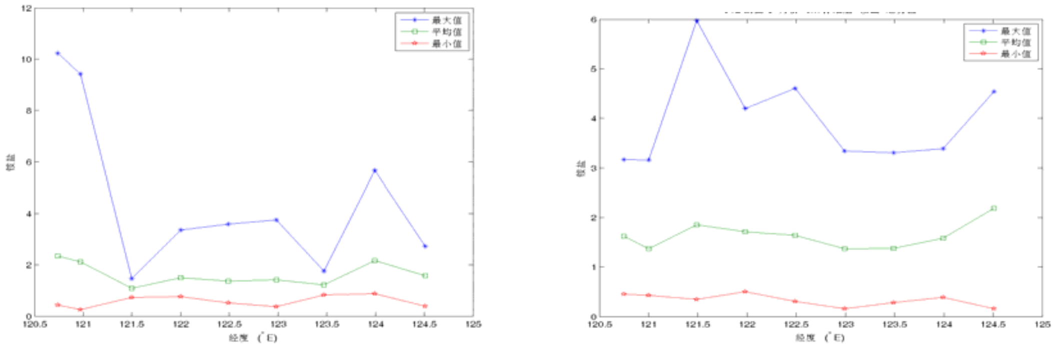


Fig. 3-2-37. Variation tendency of ammonium content in the section located in thirty and four degrees north latitude in the surface seawater of the The Yellow Sea (1985-2004, left: February, right: August)

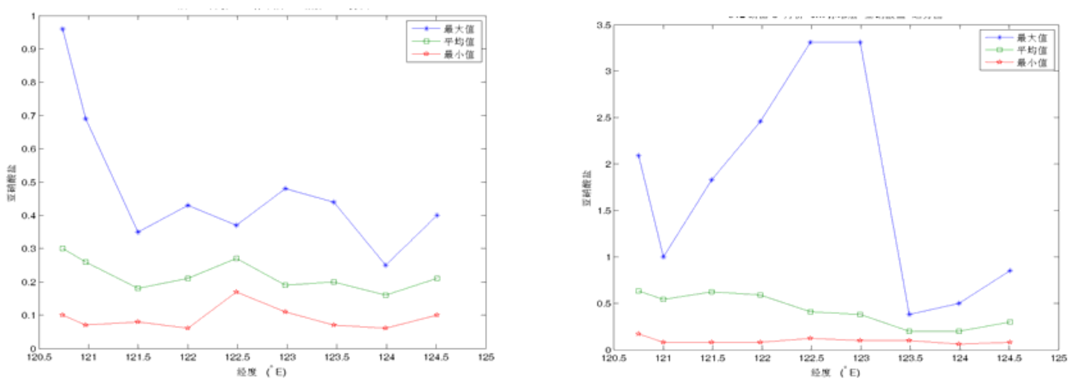


Fig. 3-2-38. Variation tendency of nitrite content in the section located in thirty and four degrees north latitude in the surface seawater of the The Yellow Sea (1985-2004, left: February, right: August)

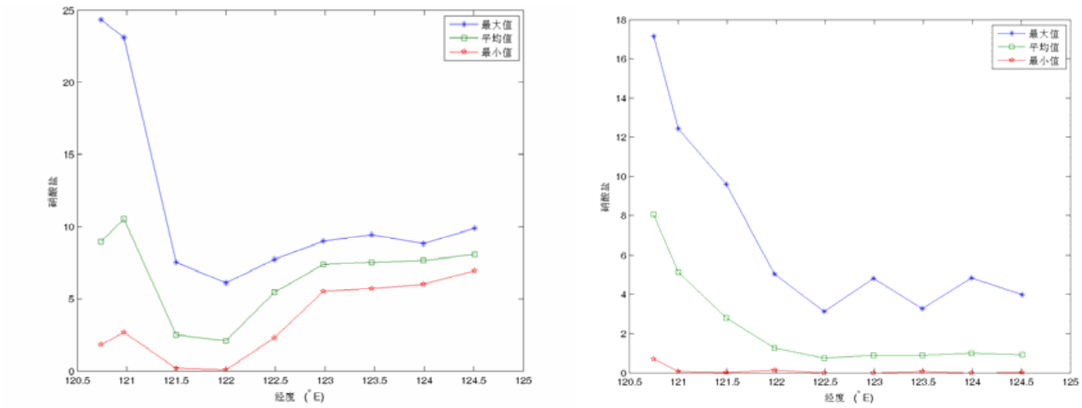


Fig. 3-2-39. Variation tendency of nitrate content in the section located in thirty and four degrees north latitude in the surface seawater of the The Yellow Sea (1985-2004, left: February, right: August)

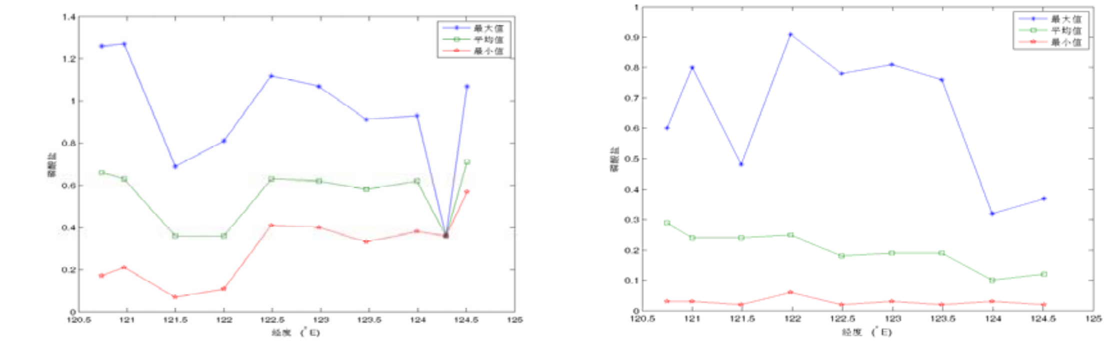


Fig. 3-2-40. Variation tendency of phosphate content in the section located in thirty and four degrees north latitude in the surface seawater of the The Yellow Sea (1985-2004, left: February, right: August)

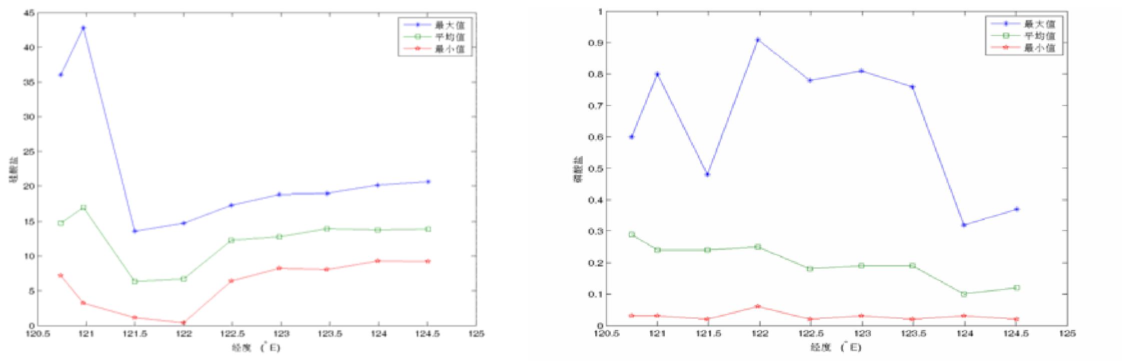


Fig. 3-2-41. Variation tendency of silicate content in the section located in thirty and four degrees north latitude in the surface seawater of the The Yellow Sea (1985-2004, left: February, right: August)

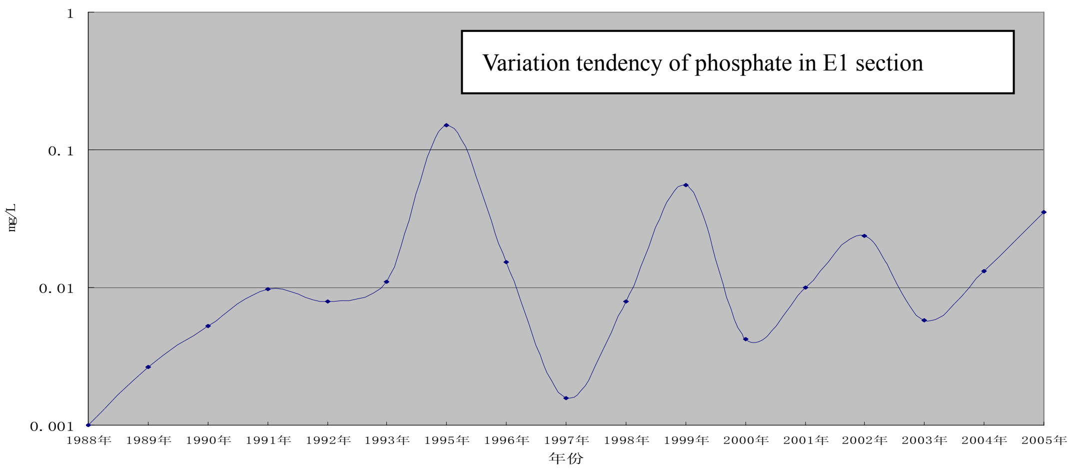


Fig. 3-2-42. Variation tendency of phosphate in the section from the Changjiang river estuary to the Chejudo Island (annual mean)

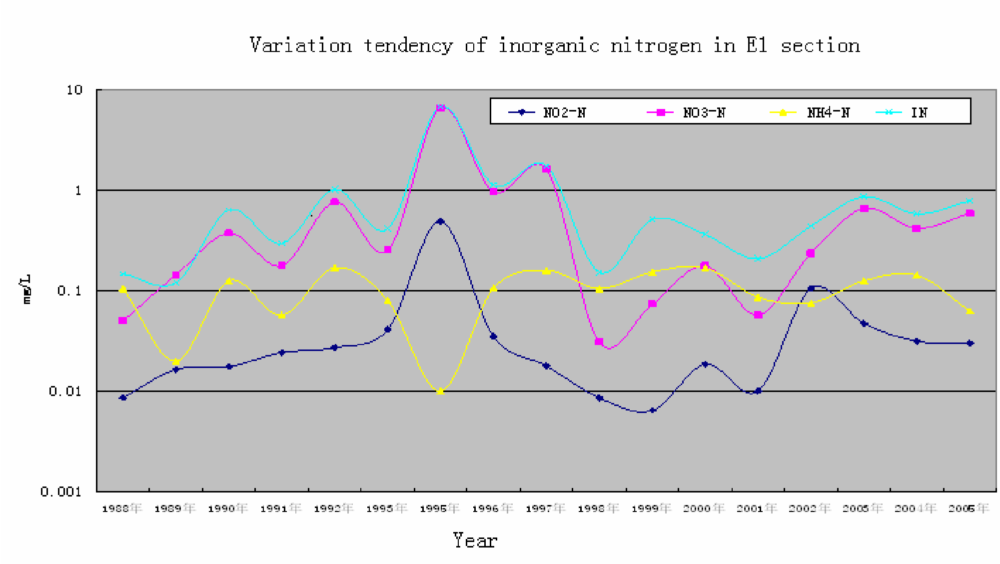


Fig. 3-2-43. Variation tendency of inorganic nitrogen content in the section from the Changjiang river estuary to the Chejudo Island (annual mean)

4. Other parameters and contaminants

4.1 pH value

In recent years， variation tendency of pH value in the coastal waters of the The Yellow Sea, China is shown in Fig. 4-1-1 ~ Fig. 4-1-4.

pH value had changed in some degrees in the coastal waters of Shangdong. A comparison made between the monitoring results of 1981and 1998 indicated: pH values ranged from 7.50 to 8.65 in spring 1998, with the range of 1.15, and pH values ranged from 7.10 to 8.50 in autumn 1998, with the range of 1.40. The pH value ranged from 7.89 to 8.48 in spring 1981, with the range of 0.59, the pH value ranged from 8.01 to 8.53 in autumn 1981, with the range of 0.52. It was evident that the range of the pH values in spring and autumn 1998 was more wider than that in the same period of 1981. The increase of the range of pH values showed that the instability of environmental conditions was increasing in this aera.

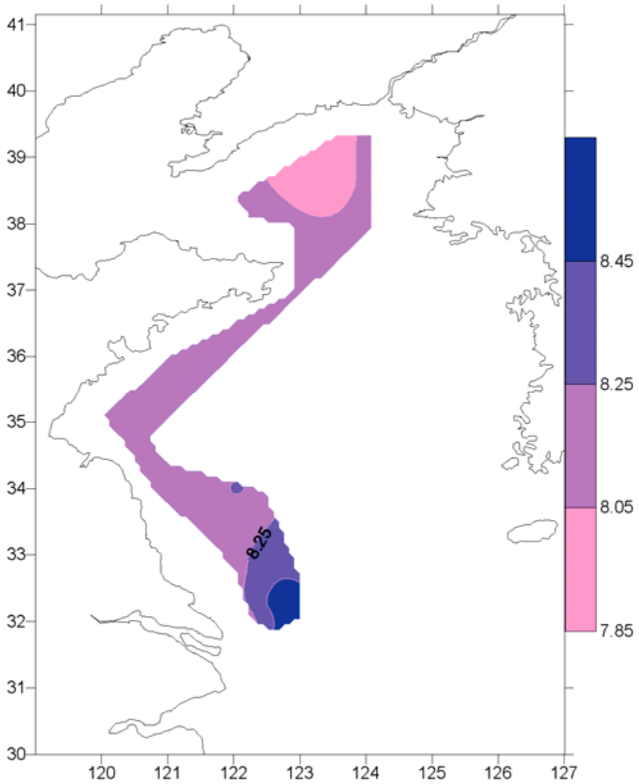


Fig. 4-1-1. Distribution of pH value in the coastal waters of the The Yellow Sea, China (Aug., 2002)

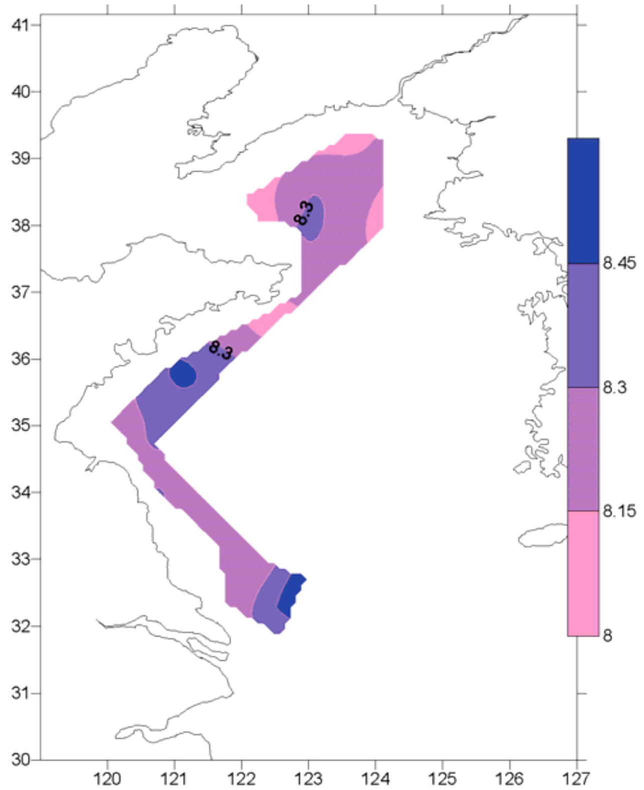


Fig. 4-1-2. Distribution of pH value in the coastal waters of the The Yellow Sea, China (Aug., 2003)

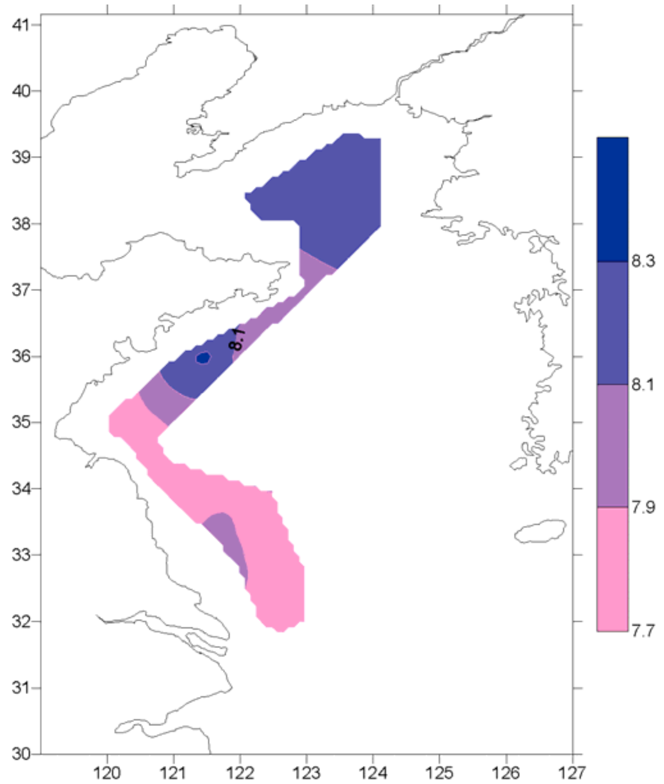


Fig. 4-1-3. Distribution of pH value in the coastal waters of the The Yellow Sea, China (Aug., 2004)

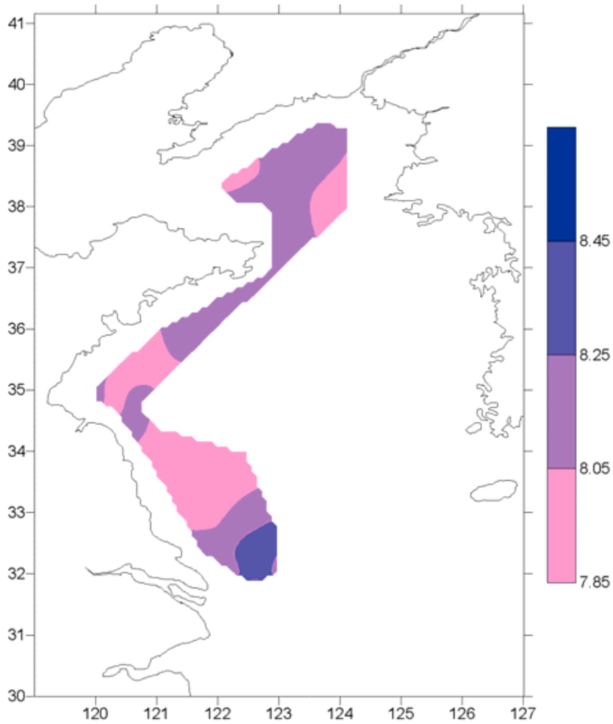


Fig. 4-1-4. Distribution of pH value in the coastal waters of the The Yellow Sea, China (Aug., 2005)

4.2 Chlorophyll-a

In recent years，the variations of Chlorophyll-a concentration in the coastal waters of the The Yellow Sea, China are shown in Fig. 4-2-1 ~ Fig. 4-2-2.

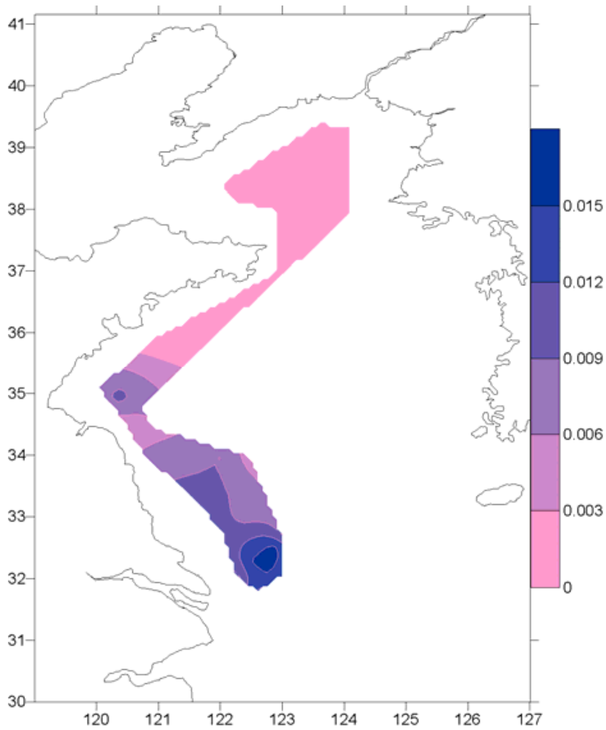


Fig. 4-2-1. Distribution of Chlorophyll-a concentration in the coastal waters of the The Yellow Sea, China (Aug., 2002)

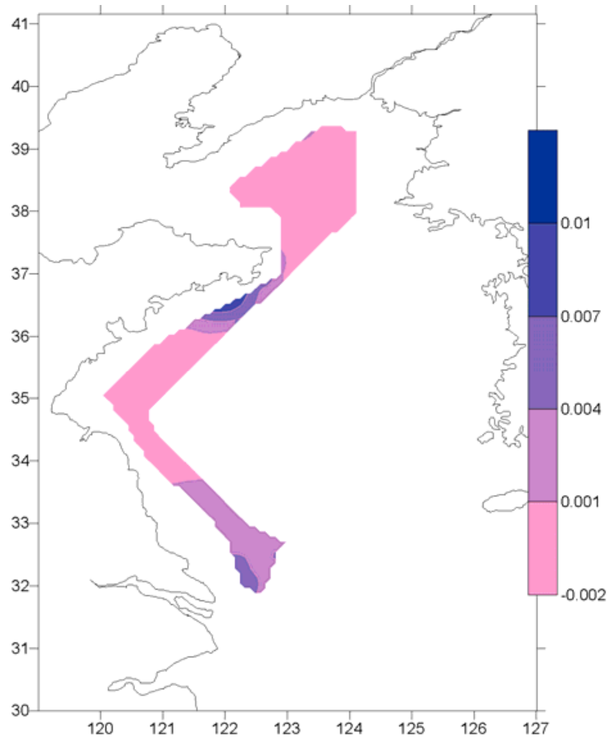


Fig. 4-2-2. Distribution of Chlorophyll-a concentration in the coastal waters of the The Yellow Sea, China (Aug., 2003)

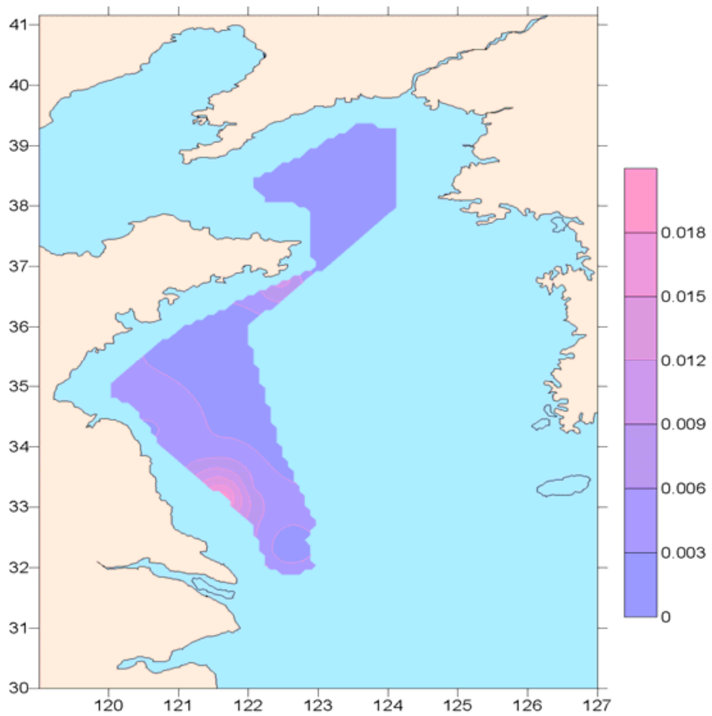


Fig. 4-2-3. Distribution of Chlorophyll-a concentration in the coastal waters of the The Yellow Sea, China (Aug., 2004)

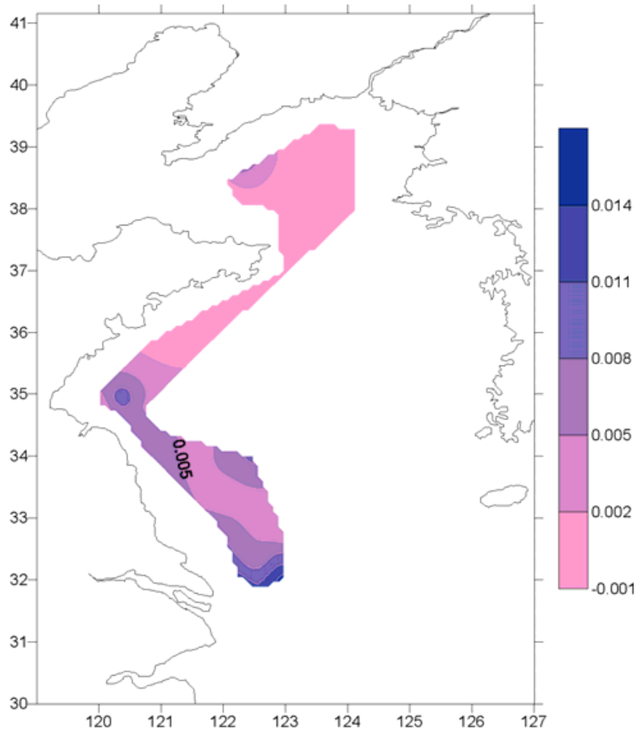


Fig. 4-2-4. Distribution of Chlorophyll-a concentration in the coastal waters of the The Yellow Sea, China (Aug., 2005)）

4.3 COD

In recent years， variation tendency of COD in the coastal waters of the The Yellow Sea, China is shown in Fig. 4-3-1~Fig. 4-3-4.

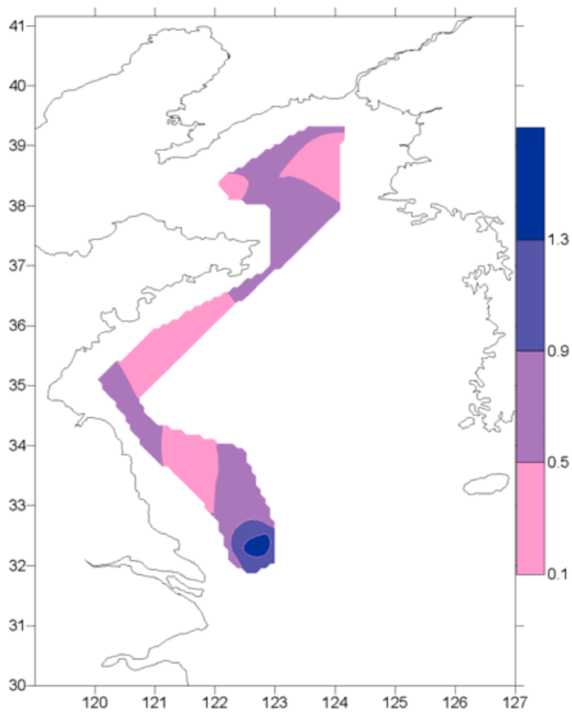


Fig. 4-3-1. Distribution of COD in the coastal waters of the The Yellow Sea, China (Aug., 2002)

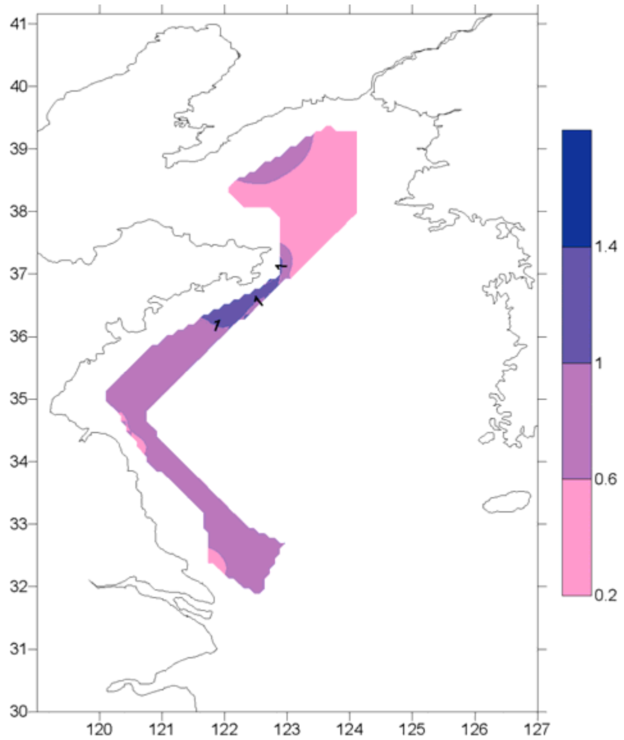


Fig. 4-3-2. Distribution of COD in the coastal waters of the The Yellow Sea, China (Aug., 2003)

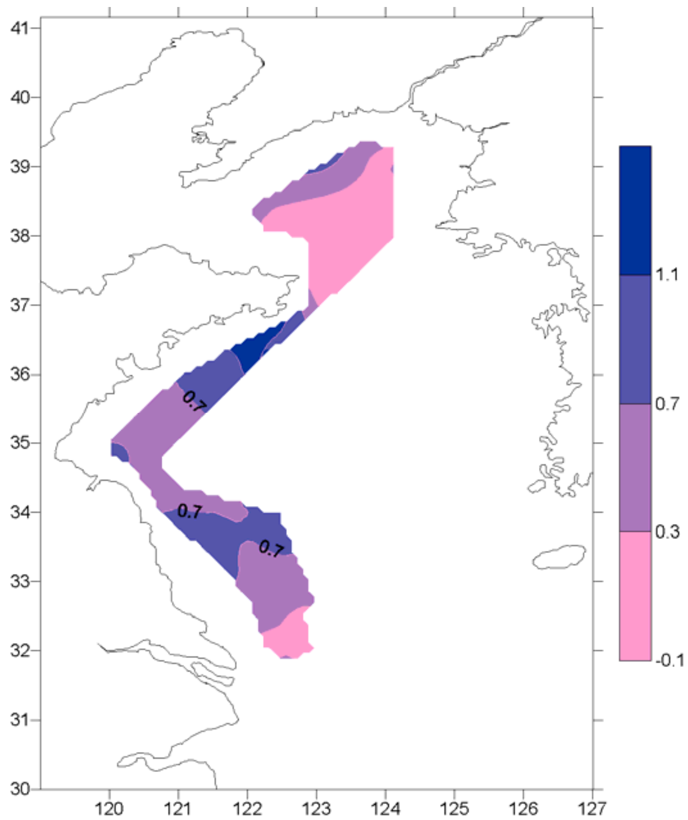


Fig. 4-3-3. Distribution of COD in the coastal waters of the The Yellow Sea, China (Aug., 2004)

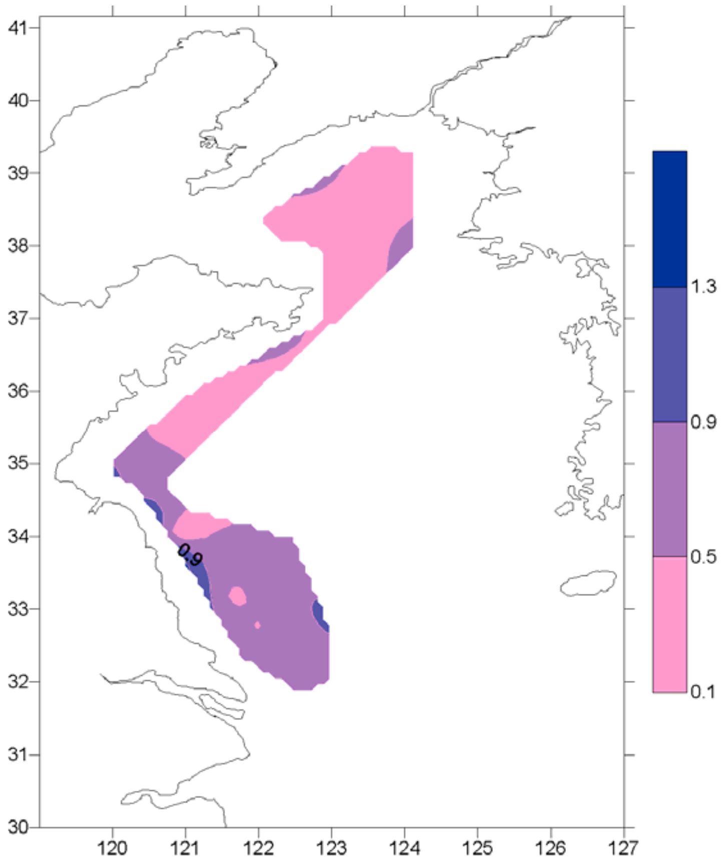


Fig. 4-3-4. Distribution of COD in the coastal waters of the The Yellow Sea, China (Aug., 2005)

4.4 Suspended substances

The strong influence of rivers on the The Yellow Sea brings about the high contents of suspended substances in the The Yellow Sea. Fig. 4-4-1 shows the distribution of the contents of suspended substances in the The Yellow Sea influenced by rivers.

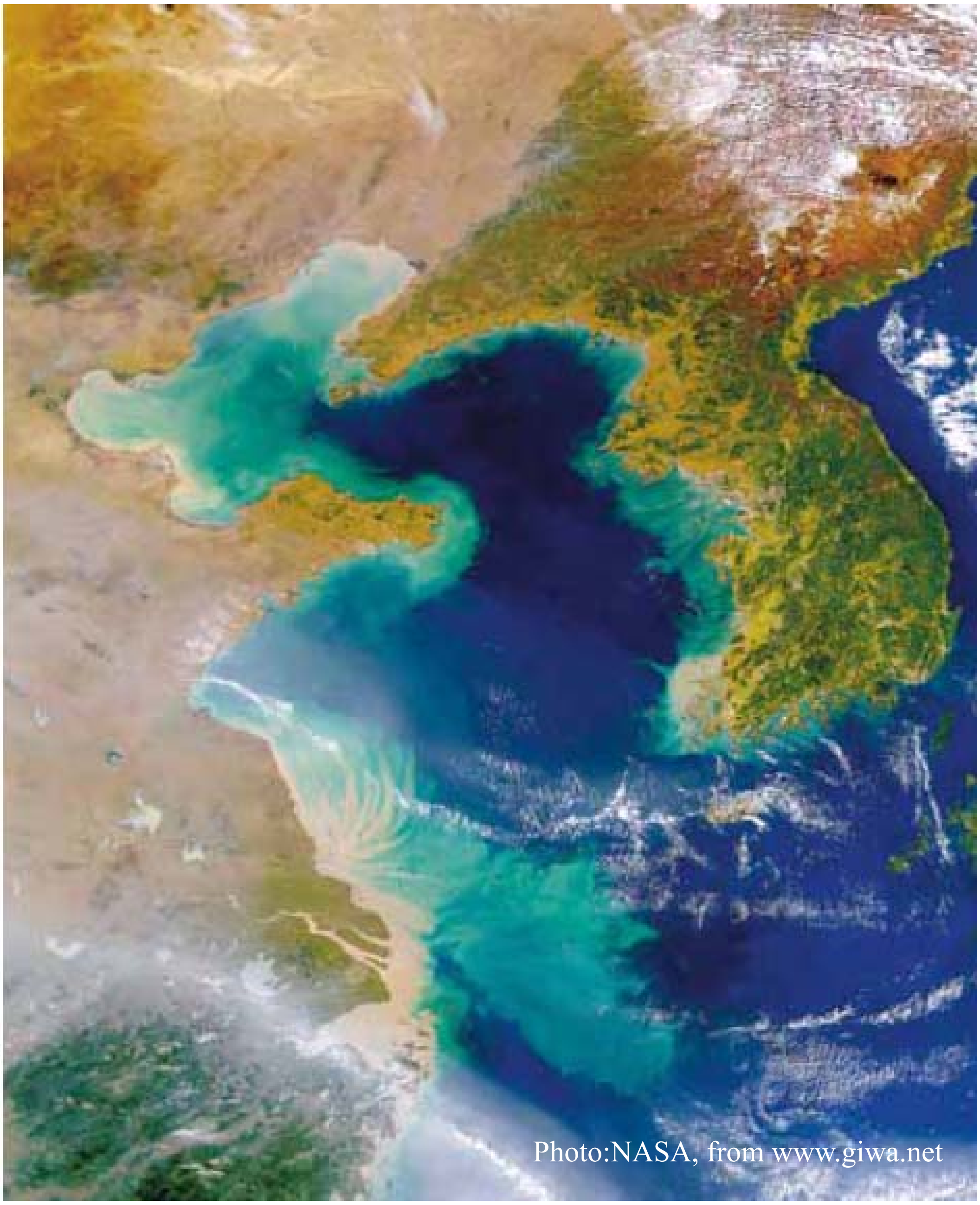


Fig. 4-4-1. Distribution of the concents of suspended substances in the coastal waters of the The Yellow Sea influenced by rivers

The contents of suspended substances in the surface seawater of the The Yellow Sea from 2000 to 2003 are shown in Fig. 4-4-2 ~ Fig. 4-4-3.

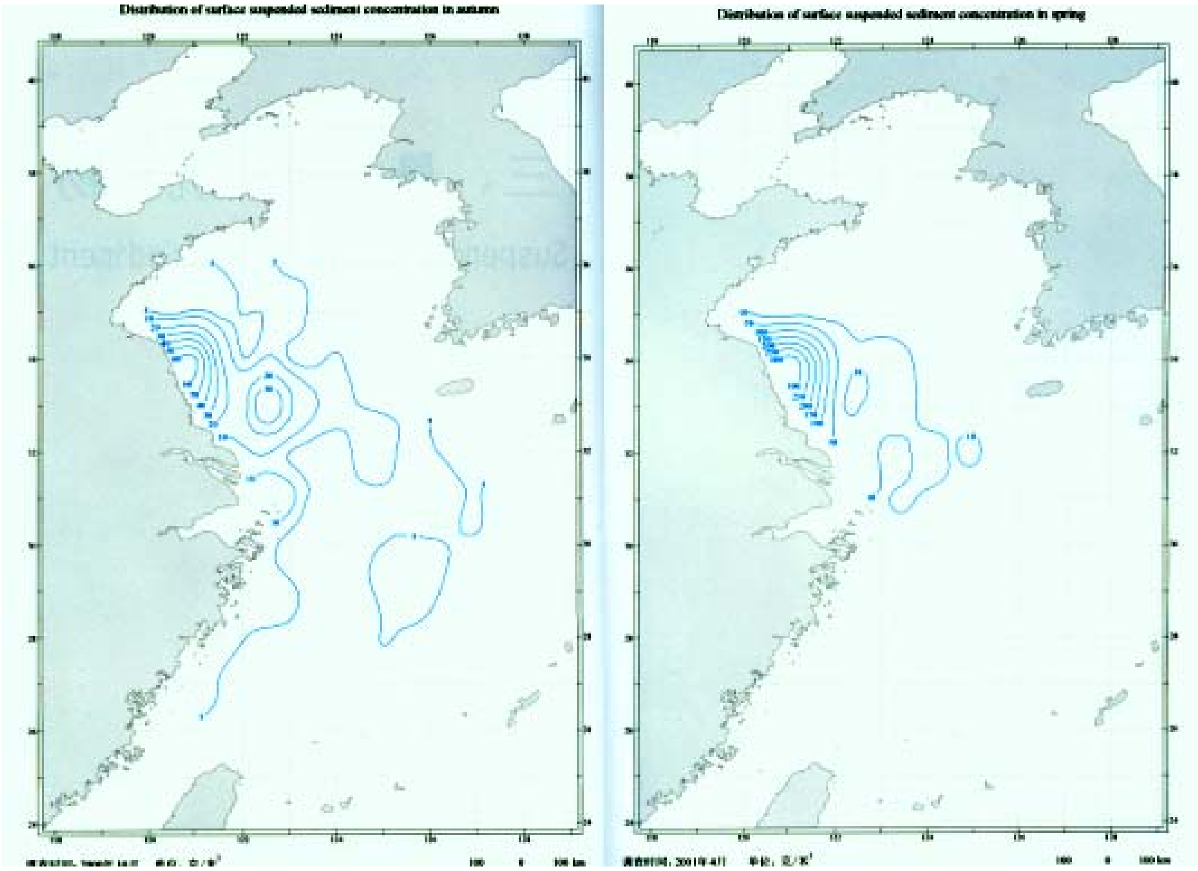


Fig. 4-4-2. Distribution of the concents of suspended substances in the The Yellow Sea (left: Autumn, 2000, right: Spring, 2001)

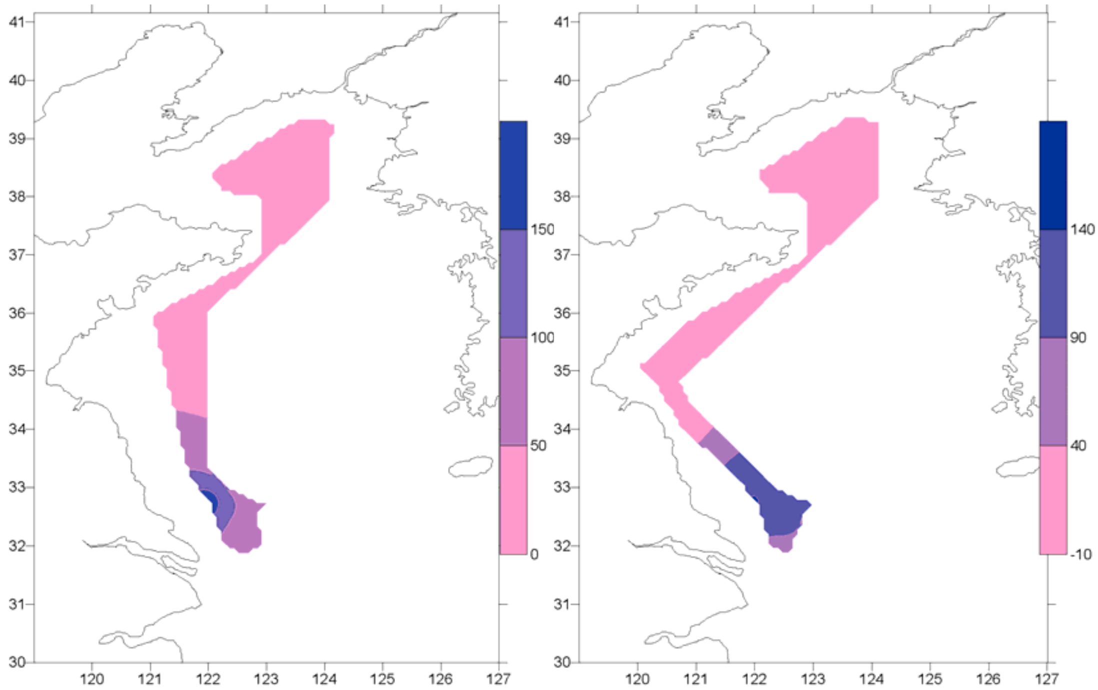


Fig. 4-4-3. Distribution of the concents of suspended substances in the The Yellow Sea (left: Aug., 2002, right: Aug., 2003)

4.5 Other contaminants

4.5.1 Contaminants in the seawater of the key sea aeras

The data of contaminants in the seawater of the key sea aeras collected from the literatures are shown in annex 1.

4.5.2 Contaminants in organisms in the key sea aeras.

The contents of contaminants in organisms in the key sea aeras collected from literatures are shown in annex 2.

4.5.3 Contaminants in sediment in the key sea aeras

The contents of contaminants in sediment in the key sea aeras collected from literatures are shown in annex 3.

5 Analyse of the social economic status in the coastal areas of the The Yellow Sea

5.1 GDP and the total value of industrial and agricultural output

In recent ten years, these three provinces around the The Yellow Sea including Liaoning, Shandong and Jiangsu play very important roles in the north of China because of the rapid development of their economy. Table 5-1-1~5-1-3 show the economic development of Liaoning, Shandong and Jiangsu provinces separately.

5.2 Population change

The overall tendency of the population of these three provinces around the The Yellow Sea is increasing. The population growth of the cities and counties in the coastal areas of Liaoning is slow. The population of the cities in the coastal areas of Shandong increases rapidly, especially in some cities at the county level, where the population increases rapidly after upgrade. The population of counties in the coastal areas of Shandong also increased rapidly, the population increased by about 4,000 thousands from 1996 to 2004. The population growth of cities and counties in the coastal areas of Jiangsu is slow. Table 5-2-1 shows the Population change in these three provinces.

Table 5-1-1. The increase of GDP in Liaoning province (10,000,000 Yuan)

GDP in Liaoning	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
The total value of industrial output			5602.18	6941.04	6674.14	7328.66	8319.51	4480.32	4888.02	6112.96	
The total value of agricultural output			892.64	920.26	986.9	977.05	967.36	1045.7	1132.5	1215	640.27
The gross product of coastal areas			3157.69	3490.06	3881.73	4171.69	4669.06	5033.08	5458.22	6002.54	6872.65
The gross product of coastal cities	296.29	358.1	942.9	1084.52	1157.75	1235.29	1376.37	1556.28	1631.5	2978.65	

Table 5-1-2. The increase of GDP in Shandong province (10,000,000 Yuan)

GDP in Shandong	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
The total value of industrial output			6126.64	9984.12	10579.17	11195.46	8542.44	9378.56	11497.53	15379.54	13253.87
The total value of agricultural output			2180.23	2232.34	2242	2202.95	4226.57	2453.96	2526	2902.5	1499.78
The gross product of coastal areas			5960.42	6650	7162.2	7662.1	8542.44	9438.31	10552.06	12435.93	15490.73
The gross product of coastal cities	829.27	998.02	777.96	1382.48	1419.2	1576.11	1845.93	1966.39	2156.26	6170.92	7849.08

Table 5-1-3. The increase of GDP in Jiangsu province (10,000,000 Yuan)

GDP in Jiangsu	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
The total value of industrial output			11555.6	12542.4	13185.7	14621.82	17653.76	11781.13	13865.86	18036.74	2780.53
The total value of agricultural output			1824.19	1816.37	1849.2	1837.43	1869.73	1983.36	2011.48	1952.2	893.56
The gross product of coastal areas			6004.21	6680.34	7199.95	7696.82	8582.73	9514.6	10631.75	12460.83	15403.17
The gross product of coastal cities	170.91	224.49	223.73	248.74	263.44	289.01	332.8	380.25	420.79	2117.91	2513.78

Table 5-2-1. Population change in these three provinces

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Liaoning Province									
Population in coastal cities	609	616.4	622.3	626.9	640.5	646.85	651.47	672.18	676.68
Dandong	69	69.7	70.1	70.2	76.3	76.18	76.01	75.67	75.22
Dalian	257.2	259.7	262.4	264.2	267.8	270.68	273.23	274.78	278.09
Population in coastal areas	572.4	675.2	677	678.56	681.4	682.24	684.07	1087.32	613.94
Changhai	8.8	8.9	8.8	8.84	8.9	8.92	8.95	8.98	8.92
Pulandian	81.8	81.9	82.1	82.1	82.5	82.69	82.61	83.06	82.34
Zhuanghe	88	88.1	88	87.9	89.7	89.61	90.09	90.29	89.9
Donggang	65.1	65.4	65.5	65.48	63.8	63.83	64.08	64.05	64.06
Shandong Province									
Population in coastal cities	726		892.1	921.2	1689.3	1495.2	956.9	3194.35	3305.19
Yantai	151.2	898.7	156.7	159.3	161.5	162.8	168.5	556.9	646.82
Weihai	46.1	154.4	49.6	50.8	246.9	247.2	55.2	247.63	248.39
Qingdao	223.9	227.2	229.6	232.2	706.7	504.3	241.7	720.68	731.12
Rizhao	111.2	272	274	275.4	268.8	276.8	277.6	278.48	280.48
Population in coastal areas	1224.4	1220.8	1223.7	1231.9	1167.7	1393.1	1231.7	1627.81	1624.28
Jiaozhou	74.1	74.7	75.1	75.4	75.8	237.7	76.4	76.45	76.95
Jimo	105.4	105.7	106.1	106.3	106.6	106.9	107.5	107.51	108.22
Jiaonan	83.3	83.5	83.7	83.6	83.6	83.7	83.7	83.8	80.8
Changdao	4.4	4.4	4.6	4.6	4.5	4.5	4.6	4.47	4.42
Wendeng	67	66.7	66.7	66.5	66.2	66	65.6	64.99	64.6
Rongcheng	68.5	68.3	68.3	68.1	68.1	67.9	67.4	67.03	66.75
Rushan	61.7	61.6	61.2	60.8	60.5	60	59.4	58.67	58.12
Jiangsu Province									
Population in coastal cities	177.31	180.8	183.5	187.4	190.6	207.33	210.94	2041.96	2040.88
Nantong	62.21	63.2	63.9	64.6	65.1	79.54	81.23	777.62	773.79
Lianyungang	58.17	59.4	59.7	61.7	62.5	63.86	64.74	467.83	468.81
Yancheng	56.93	58.2	59.9	61.1	63	63.93	64.97	796.51	798.28
Population in coastal areas	1228.76	1412.2	1419.2	1419.7	1427.1	1413.68	1413.92	1478.66	1408.49
Haian	99	99.2	98.9	98.5	98.2	79.76	97.27	96.54	95.98
Rudong	113.2	112.9	112.6	112.1	111.5	110.89	110.11	109.36	108.46
Haimen	103.46	103.2	104.9	103.7	103.6	103.13	102.75	102.33	108.32
Qidong	113.2	116.8	116.6	116.6	116.2	115.67	115.13	114.38	113.4
Tongzhou	145.57	145.7	145.2	144.7	144.3	130.19	129.21	128.13	127.14
Ganyu	100.89	101.6	102.6	102.6	104.8	105.83	106.83	107.91	107.09
Guanyun	98.44	99.2	101.3	102.3	104.2	104.88	106.26	107.23	107.25
Xiangshui	54.64	55	55.5	55.7	56.5	56.79	56.91	57.21	57.53
Binhai	106.68	107.2	106.6	106.8	107	107.3	108.03	108.57	108.64
Shexiang	102.31	103	104.2	104.8	105.5	105.3	105.07	104.7	104.34
Dafeng	74	74.2	74.1	74	74.1	74.07	73.77	73.37	73.05
Dongtai	117.37	117.2	117.6	117.6	117.3	116.8	116.38	116.24	114.43

The population of the coastal cities of Jiangsu province changed in 2003 and 2004 because of different statistical methods.

5.3 Communication and transport

Marine communication and transport in these three provinces around the The Yellow Sea is relatively developed. There are some famous harbors such as Dalian harbor, Qingdao harbor and Nantong harbor in these three provinces, and there are also many smaller harbors in the coastal areas. The status and tendency of the development of marine communication and transport in these three provinces around the The Yellow Sea is shown in Table 5-3-1. As is shown in the table, marine communication and transport in these three provinces is developing rapidly, there is a sharp increase in the amount of marine freight and freight turnover in the past ten years. Table 5-3-2 shows the income of marine communication and transport in Liaoning, Shandong and Jiangsu provinces.

Table 5-3-1. The status of the development of marine communication and transport in these three provinces around the The Yellow Sea

The amount of marine freight (10,000 tons)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
National total amount	36783	40110	42672	45744	21793	47714	53653	60470	66288	76561	95760
Total amount directly under the Ministry of communications	24570	25664	25550	28420	16418						
Regional total amount	12213	14446	17122	17324	5375						
Liaoning	687	588	606	528	231	2439	3015	2648	2981	3569	4366
Shandong	1443	1157	1424	1530	593	3001	3746	4615	4194	4424	5543
Jiangsu	2023	432	391	402	278	1551	1627	1553	1730	2475	3573
The amount of marine freight turnover (10,000,000 tons/Km)											
National total amount	14455.4	16037.9	15983	17733.2	18016.3	19843.7	22183	24451.9	26001.9	27006.92	3924425
Total amount directly under the Ministry of communications	13172.8	14581.8	14184.4	15851.5	16126.3						
Regional total amount	1282.6	1456.1	1798.6	1881.7	1890						
Liaoning	122	136.7	154.4	135.1	121.5	452.7	572	507.8	660.9	1130.49	1461.01
Shandong	116.3	134.2	173.1	179.2	156.3	1624.1	2791.3	3370.3	2679.6	2304.48	2964.92
Jiangsu	252.6	84.9	77.1	83.8	82.3	267.1	283.2	268.6	375	550.36	1055.5

Table 5-3-2. The income of marine communication and transport in Liaoning, Shandong and Jiangsu provinces

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
National sum	5817693	5405956	5223577	5295106	5727749	7173997	7889282	13420012	19065600	23957800
Liaoning	285840	287970	276489	291285	104020	374814	219539	488550	950000	1200000
Shandong	842902	321953	352377	398099	476524	45833	752002	871425	1326400	1470400
Jiangsu	107035	204368	463959	463959	94364	112802	29445	113315	166300	120400

5.4 Coastal tourism

Coastal tourism increases rapidly in recent years. Since 2002, the income of coastal tourism has been the first place in all of the income of main marine industries in China and is increasing steadily. The coastal tourism in these three provinces around the The Yellow Sea is developing rapidly, and table 5-4-1 shows the total income of the coastal tourism in these regions in different years.

Table 5-4-1. The total value of coastal tourism in these three provinces around the The Yellow Sea

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
national sum	519	5262	5339	5402	5074	5090	6380	6207	6586	6913	7102
Liaoning	167	192	207	204	200	595	616	602	626	542	641
Shandong	627	693	734	914	872	863	822	987	1112	1115	1241
Jiangsu	281										

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Annex 1 The contents of contaminants in the seawater of the key sea aeras

Area	Number of sampling site	sampling position				Sampling time	Sampling layer	Contaminant (unit)	Contents
		longitude (°)	Longitude (′)	Latitude (°)	Latitude (′)				
The Jiaozhou Bay		120	16	36	4	Oct-89	surface	B (mg/kg)	3.67
The Jiaozhou Bay		120	14	36	5	Oct-89	surface	B (mg/kg)	3.8
The Jiaozhou Bay		120	11	36	6	Oct-89	surface	B (mg/kg)	3.65
The Jiaozhou Bay		120	11	36	8	Oct-89	surface	B (mg/kg)	3.7
The Jiaozhou Bay		120	16	36	10	Oct-89	surface	B (mg/kg)	3.43
The Jiaozhou Bay		120	18	36	8	Oct-89	surface	B (mg/kg)	3.47
The Jiaozhou Bay		120	16	36	8	Oct-89	surface	B (mg/kg)	3.57
The Jiaozhou Bay		120	20	36	11	Oct-89	surface	B (mg/kg)	3.85
The Jiaozhou Bay		120	16	36	6	Oct-89	surface	B (mg/kg)	3.65
The Jiaozhou Bay		120	19	36	13	Oct-89	surface	B (mg/kg)	3.7
The Jiaozhou Bay		120	20	36	10	Oct-89	surface	B (mg/kg)	3.5
The Jiaozhou Bay		120	20	36	9	Oct-89	surface	B (mg/kg)	3.51
The Jiaozhou Bay		120	20	36	13	Oct-89	surface	B (mg/kg)	3.43
The Jiaozhou Bay		120	20	36	11	Oct-89	surface	B (mg/kg)	3.42
The Jiaozhou Bay		120	14	36	7	Oct-89	surface	B (mg/kg)	3.38
The Jiaozhou Bay		120	17	36	6	May-95	surface	B (mg/kg)	3.62
The Jiaozhou Bay		120	19	36	7	May-95	surface	B (mg/kg)	3.85
The Jiaozhou Bay		120	20	36	9	May-95	surface	B (mg/kg)	3.76
The Jiaozhou Bay		120	15	36	8	May-95	surface	B (mg/kg)	3.87
The Jiaozhou Bay		120	18	36	9	May-95	surface	B (mg/kg)	3.24
The Jiaozhou Bay		120	15	36	6	May-95	surface	B (mg/kg)	3.46

The Jiaozhou Bay		120	11	36	7	May-95	surface	B (mg/kg)	3.79
The Jiaozhou Bay		120	15	36	3	May-95	surface	B (mg/kg)	3.77
The Jiaozhou Bay	Luxun Park						surface	B (mg/kg)	3.89
The Liaodong Bay	L1					Jul-99	surface	Aldrin (ng/L)	4.67
The Liaodong Bay	L2					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L3					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L4					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L6					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L8					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	2					Jul-99	surface	p.p'-DDD (ng/L)	0.11
The DaLian Bay	4					Jul-99	surface	p.p'-DDD (ng/L)	0.15
The DaLian Bay	6					Jul-99	surface	p.p'-DDD (ng/L)	0.23
The DaLian Bay	8					Jul-99	surface	p.p'-DDD (ng/L)	0.22
The DaLian Bay	10					Jul-99	surface	p.p'-DDD (ng/L)	1.01
The DaLian Bay	2					Jul-99	surface	p.p'-DDD (ng/L)	0.06
The DaLian Bay	4					Jul-99	surface	p.p'-DDD (ng/L)	0.81
The DaLian Bay	6					Jul-99	surface	p.p'-DDD (ng/L)	0.15
The DaLian Bay	8					Jul-99	surface	p.p'-DDD (ng/L)	0.06
The DaLian Bay	10					Jul-99	surface	p.p'-DDD (ng/L)	0.21
The DaLian Bay	2					Jul-99	surface	p.p'-DDD (ng/L)	0.48
The DaLian Bay	4					Jul-99	surface	p.p'-DDD (ng/L)	0.22
The DaLian Bay	6					Jul-99	surface	p.p'-DDD (ng/L)	0.29
The DaLian Bay	8					Jul-99	surface	p.p'-DDD (ng/L)	0.25
The DaLian Bay	10					Jul-99	surface	p.p'-DDD (ng/L)	0.80
The DaLian Bay	D2					Jul-99	surface	DDTs[1] (ng/L)	0.65

The DaLian Bay	D4					Jul-99	surface	DDTs[1] (ng/L)	1.18
The DaLian Bay	D6					Jul-99	surface	DDTs[1] (ng/L)	0.67
The DaLian Bay	D8					Jul-99	surface	DDTs[1] (ng/L)	0.53
The DaLian Bay	D10					Jul-99	surface	DDTs[1] (ng/L)	2.02
The Liaodong Bay	L1					Jul-99	surface	DDTs[1] (ng/L)	36.16
The Liaodong Bay	L2					Jul-99	surface	DDTs[1] (ng/L)	ND
The Liaodong Bay	L3					Jul-99	surface	DDTs[1] (ng/L)	22.52
The Liaodong Bay	L4					Jul-99	surface	DDTs[1] (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	DDTs[1] (ng/L)	1.35
The Liaodong Bay	L6					Jul-99	surface	DDTs[1] (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	DDTs[1] (ng/L)	5.47
The Liaodong Bay	L8					Jul-99	surface	DDTs[1] (ng/L)	ND
The DaLian Bay	D2A					Jul-99	micro-surface	DDTs[1] (ng/L)	7.77
The DaLian Bay	D2B					Jul-99	surface	DDTs[1] (ng/L)	0.35
The DaLian Bay	D4A					Jul-99	micro-surface	DDTs[1] (ng/L)	3.36
The DaLian Bay	D4B					Jul-99	surface	DDTs[1] (ng/L)	1.18
The DaLian Bay	D6A					Jul-99	micro-surface	DDTs[1] (ng/L)	5.49
The DaLian Bay	D6B					Jul-99	surface	DDTs[1] (ng/L)	0.67
The DaLian Bay	D8A					Jul-99	micro-surface	DDTs[1] (ng/L)	0.8
The DaLian Bay	D8B					Jul-99	surface	DDTs[1] (ng/L)	0.53
The DaLian Bay	D10A					Jul-99	micro-surface	DDTs[1] (ng/L)	3.36
The DaLian Bay	D10B					Jul-99	surface	DDTs[1] (ng/L)	2.02
The DaLian Bay	2A					Jul-99	micro-surface	DDTs[1] (ng/L)	7.77
The DaLian Bay	2B					Jul-99	surface	DDTs[1] (ng/L)	0.35
The DaLian Bay	4A					Jul-99	micro-surface	DDTs[1] (ng/L)	3.36
The DaLian Bay	4B					Jul-99	surface	DDTs[1] (ng/L)	1.18
The DaLian Bay	6A					Jul-99	micro-surface	DDTs[1] (ng/L)	5.49

The DaLian Bay	6B					Jul-99	surface	DDTs[1] (ng/L)	0.67
The DaLian Bay	8A					Jul-99	micro-surface	DDTs[1] (ng/L)	0.8
The DaLian Bay	8B					Jul-99	surface	DDTs[1] (ng/L)	0.53
The DaLian Bay	10A					Jul-99	micro-surface	DDTs[1] (ng/L)	3.36
The DaLian Bay	10B					Jul-99	surface	DDTs[1] (ng/L)	2.02
The DaLian Bay	2					Jul-99	surface	DDTs[1] (ng/L)	0.65
The DaLian Bay	4					Jul-99	surface	DDTs[1] (ng/L)	1.18
The DaLian Bay	6					Jul-99	surface	DDTs[1] (ng/L)	0.67
The DaLian Bay	8					Jul-99	surface	DDTs[1] (ng/L)	0.53
The DaLian Bay	10					Jul-99	surface	DDTs[1] (ng/L)	2.02
The DaLian Bay	D2					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	D4					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	D6					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	D8					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	D10					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	2A					Jul-99	micro-surface	BHCs[2] (ng/L)	26.77
The DaLian Bay	2B					Jul-99	surface	BHCs[2] (ng/L)	0.96
The DaLian Bay	4A					Jul-99	micro-surface	BHCs[2] (ng/L)	16.21
The DaLian Bay	4B					Jul-99	surface	BHCs[2] (ng/L)	3.86
The DaLian Bay	6A					Jul-99	micro-surface	BHCs[2] (ng/L)	92.61
The DaLian Bay	6B					Jul-99	surface	BHCs[2] (ng/L)	3.43
The DaLian Bay	8A					Jul-99	micro-surface	BHCs[2] (ng/L)	8.44
The DaLian Bay	8B					Jul-99	surface	BHCs[2] (ng/L)	4.9
The DaLian Bay	10A					Jul-99	micro-surface	BHCs[2] (ng/L)	7.87
The DaLian Bay	10B					Jul-99	surface	BHCs[2] (ng/L)	3.54
The DaLian Bay	2					Jul-99	surface	BHCs[2] (ng/L)	0.96
The DaLian Bay	4					Jul-99	surface	BHCs[2] (ng/L)	3.86

The DaLian Bay	6					Jul-99	surface	BHCs[2] (ng/L)	3.43
The DaLian Bay	8					Jul-99	surface	BHCs[2] (ng/L)	4.90
The DaLian Bay	10					Jul-99	surface	BHCs[2] (ng/L)	3.54
The DaLian Bay	D2					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	D4					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	D6					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	D8					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	D10					Jul-99	surface	Aldrin (ng/L)	ND
The Liaodong Bay	L1					Jul-99	surface	HCB (ng/L)	1.63
The Liaodong Bay	L2					Jul-99	surface	HCB (ng/L)	1.58
The Liaodong Bay	L3					Jul-99	surface	HCB (ng/L)	1.34
The Liaodong Bay	L4					Jul-99	surface	HCB (ng/L)	1.45
The Liaodong Bay	L5					Jul-99	surface	HCB (ng/L)	0.64
The Liaodong Bay	L6					Jul-99	surface	HCB (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	HCB (ng/L)	ND
The Liaodong Bay	L8					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	D2					Jul-99	surface	HCHs[2] (ng/L)	0.96
The DaLian Bay	D4					Jul-99	surface	HCHs[2] (ng/L)	3.86
The DaLian Bay	D6					Jul-99	surface	HCHs[2] (ng/L)	3.43
The DaLian Bay	D8					Jul-99	surface	HCHs[2] (ng/L)	4.9
The DaLian Bay	D10					Jul-99	surface	HCHs[2] (ng/L)	3.54
The Liaodong Bay	L1					Jul-99	surface	HCHs[2] (ng/L)	47.1
The Liaodong Bay	L2					Jul-99	surface	HCHs[2] (ng/L)	43.12
The Liaodong Bay	L3					Jul-99	surface	HCHs[2] (ng/L)	39.25
The Liaodong Bay	L4					Jul-99	surface	HCHs[2] (ng/L)	40.42
The Liaodong Bay	L5					Jul-99	surface	HCHs[2] (ng/L)	26.81
The Liaodong Bay	L6					Jul-99	surface	HCHs[2] (ng/L)	28.25

The Liaodong Bay	L7					Jul-99	surface	HCHs[2] (ng/L)	40.77
The Liaodong Bay	L8					Jul-99	surface	HCHs[2] (ng/L)	45.51
The DaLian Bay	D2A					Jul-99	micro-surface	HCHs[2] (ng/L)	26.77
The DaLian Bay	D2B					Jul-99	surface	HCHs[2] (ng/L)	0.96
The DaLian Bay	D4A					Jul-99	micro-surface	HCHs[2] (ng/L)	16.21
The DaLian Bay	D4B					Jul-99	surface	HCHs[2] (ng/L)	3.86
The DaLian Bay	D6A					Jul-99	micro-surface	HCHs[2] (ng/L)	92.61
The DaLian Bay	D6B					Jul-99	surface	HCHs[2] (ng/L)	3.43
The DaLian Bay	D8A					Jul-99	micro-surface	HCHs[2] (ng/L)	8.44
The DaLian Bay	D8B					Jul-99	surface	HCHs[2] (ng/L)	4.9
The DaLian Bay	D10A					Jul-99	micro-surface	HCHs[2] (ng/L)	7.87
The DaLian Bay	D10B					Jul-99	surface	HCHs[2] (ng/L)	3.54
The DaLian Bay	D2					Jul-99	surface	Heptachlor (ng/L)	0.16
The DaLian Bay	D4					Jul-99	surface	Heptachlor (ng/L)	0.19
The DaLian Bay	D6					Jul-99	surface	Heptachlor (ng/L)	0.23
The DaLian Bay	D8					Jul-99	surface	Heptachlor (ng/L)	0.26
The DaLian Bay	D10					Jul-99	surface	Heptachlor (ng/L)	0.04
The Liaodong Bay	L1					Jul-99	surface	Heptachlor (ng/L)	7.18
The Liaodong Bay	L2					Jul-99	surface	Heptachlor (ng/L)	ND
The Liaodong Bay	L3					Jul-99	surface	Heptachlor (ng/L)	ND
The Liaodong Bay	L4					Jul-99	surface	Heptachlor (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	Heptachlor (ng/L)	ND
The Liaodong Bay	L6					Jul-99	surface	Heptachlor (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	Heptachlor (ng/L)	2.46
The Liaodong Bay	L8					Jul-99	surface	Heptachlor (ng/L)	ND
The DaLian Bay	D2A					Jul-99	micro-surface	Heptachlor (ng/L)	1.5
The DaLian Bay	D2B					Jul-99	surface	Heptachlor (ng/L)	0.16

The DaLian Bay	D4A					Jul-99	micro-surface	Heptachlor (ng/L)	0.54
The DaLian Bay	D4B					Jul-99	surface	Heptachlor (ng/L)	0.19
The DaLian Bay	D6A					Jul-99	micro-surface	Heptachlor (ng/L)	1097
The DaLian Bay	D6B					Jul-99	surface	Heptachlor (ng/L)	0.23
The DaLian Bay	D8A					Jul-99	micro-surface	Heptachlor (ng/L)	0.23
The DaLian Bay	D8B					Jul-99	surface	Heptachlor (ng/L)	0.26
The DaLian Bay	D10A					Jul-99	micro-surface	Heptachlor (ng/L)	0.04
The DaLian Bay	D10B					Jul-99	surface	Heptachlor (ng/L)	0.04
The DaLian Bay	D2					Jul-99	surface	OCPs[3] (ng/L)	1.77
The DaLian Bay	D4					Jul-99	surface	OCPs[3] (ng/L)	5.32
The DaLian Bay	D6					Jul-99	surface	OCPs[3] (ng/L)	4.33
The DaLian Bay	D8					Jul-99	surface	OCPs[3] (ng/L)	5.69
The DaLian Bay	D10					Jul-99	surface	OCPs[3] (ng/L)	5.6
The Liaodong Bay	L1					Jul-99	surface	OCPs[3] (ng/L)	83.26
The Liaodong Bay	L2					Jul-99	surface	OCPs[3] (ng/L)	44.7
The Liaodong Bay	L3					Jul-99	surface	OCPs[3] (ng/L)	63.11
The Liaodong Bay	L4					Jul-99	surface	OCPs[3] (ng/L)	41.87
The Liaodong Bay	L5					Jul-99	surface	OCPs[3] (ng/L)	29.8
The Liaodong Bay	L6					Jul-99	surface	OCPs[3] (ng/L)	28.25
The Liaodong Bay	L7					Jul-99	surface	OCPs[3] (ng/L)	48.7
The Liaodong Bay	L8					Jul-99	surface	OCPs[3] (ng/L)	45.51
The DaLian Bay	D2A					Jul-99	micro-surface	OCPs[3] (ng/L)	36.04
The DaLian Bay	D2B					Jul-99	surface	OCPs[3] (ng/L)	1.47
The DaLian Bay	D4A					Jul-99	micro-surface	OCPs[3] (ng/L)	20.11
The DaLian Bay	D4B					Jul-99	surface	OCPs[3] (ng/L)	5.23
The DaLian Bay	D6A					Jul-99	micro-surface	OCPs[3] (ng/L)	109.07
The DaLian Bay	D6B					Jul-99	surface	OCPs[3] (ng/L)	4.33

The DaLian Bay	D8A					Jul-99	micro-surface	OCPs[3] (ng/L)	9.47
The DaLian Bay	D8B					Jul-99	surface	OCPs[3] (ng/L)	5.69
The DaLian Bay	D10A					Jul-99	micro-surface	OCPs[3] (ng/L)	11.27
The DaLian Bay	D10B					Jul-99	surface	OCPs[3] (ng/L)	5.6
The DaLian Bay	2A					Jul-99	micro-surface	p.p'-DDD (ng/L)	1.61
The DaLian Bay	2B					Jul-99	surface	p.p'-DDD (ng/L)	0.11
The DaLian Bay	4A					Jul-99	micro-surface	p.p'-DDD (ng/L)	0.45
The DaLian Bay	4B					Jul-99	surface	p.p'-DDD (ng/L)	0.15
The DaLian Bay	6A					Jul-99	micro-surface	p.p'-DDD (ng/L)	1.76
The DaLian Bay	6B					Jul-99	surface	p.p'-DDD (ng/L)	0.23
The DaLian Bay	8A					Jul-99	micro-surface	p.p'-DDD (ng/L)	0.24
The DaLian Bay	8B					Jul-99	surface	p.p'-DDD (ng/L)	0.22
The DaLian Bay	10A					Jul-99	micro-surface	p.p'-DDD (ng/L)	1.51
The DaLian Bay	10B					Jul-99	surface	p.p'-DDD (ng/L)	1.01
The DaLian Bay	8					Jul-99	micro-surface	p.p'-DDD (ng/L)	1.1
The DaLian Bay	10					Jul-99	micro-surface	p.p'-DDD (ng/L)	1.5
The DaLian Bay	2					Jul-99	micro-surface	p.p'-DDD (ng/L)	14.6
The DaLian Bay	4					Jul-99	micro-surface	p.p'-DDD (ng/L)	3.0
The DaLian Bay	6					Jul-99	micro-surface	PP -DDD (ng/L)	7.6
The DaLian Bay	D2					Jul-99	surface	p.p'-DDD (ng/L)	0.11
The DaLian Bay	D4					Jul-99	surface	p.p'-DDD (ng/L)	0.15
The DaLian Bay	D6					Jul-99	surface	p.p'-DDD (ng/L)	0.23
The DaLian Bay	D8					Jul-99	surface	p.p'-DDD (ng/L)	0.22
The DaLian Bay	D10					Jul-99	surface	p.p'-DDD (ng/L)	1.01
The Liaodong Bay	L1					Jul-99	surface	p.p'-DDD (ng/L)	21.54
The Liaodong Bay	L2					Jul-99	surface	p.p'-DDD (ng/L)	ND
The Liaodong Bay	L3					Jul-99	surface	p.p'-DDD (ng/L)	6.69

The Liaodong Bay	L4					Jul-99	surface	p.p’-DDD (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	p.p’-DDD (ng/L)	ND
The Liaodong Bay	L6					Jul-99	surface	p.p’-DDD (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	p.p’-DDD (ng/L)	2.98
The Liaodong Bay	L8					Jul-99	surface	p.p’-DDD (ng/L)	ND
The DaLian Bay	D2A					Jul-99	micro-surface	p.p’-DDD (ng/L)	1.61
The DaLian Bay	D2B					Jul-99	surface	p.p’-DDD (ng/L)	0.11
The DaLian Bay	D4A					Jul-99	micro-surface	p.p’-DDD (ng/L)	0.45
The DaLian Bay	D4B					Jul-99	surface	p.p’-DDD (ng/L)	0.15
The DaLian Bay	D6A					Jul-99	micro-surface	p.p’-DDD (ng/L)	1.76
The DaLian Bay	D6B					Jul-99	surface	p.p’-DDD (ng/L)	0.23
The DaLian Bay	D8A					Jul-99	micro-surface	p.p’-DDD (ng/L)	0.24
The DaLian Bay	D8B					Jul-99	surface	p.p’-DDD (ng/L)	0.22
The DaLian Bay	D10A					Jul-99	micro-surface	p.p’-DDD (ng/L)	1.51
The DaLian Bay	D10B					Jul-99	surface	p.p’-DDD (ng/L)	1.01
The DaLian Bay	8					Jul-99	micro-surface	p.p’-DDE (ng/L)	2.3
The DaLian Bay	10					Jul-99	micro-surface	p.p’-DDE (ng/L)	2.3
The DaLian Bay	2					Jul-99	micro-surface	p.p’-DDE (ng/L)	22.7
The DaLian Bay	4					Jul-99	micro-surface	p.p’-DDE (ng/L)	3.0
The DaLian Bay	6					Jul-99	micro-surface	p.p’-DDE (ng/L)	7.2
The DaLian Bay	D2					Jul-99	surface	p.p’-DDE (ng/L)	0.11
The DaLian Bay	D4					Jul-99	surface	p.p’-DDE (ng/L)	0.15
The DaLian Bay	D6					Jul-99	surface	p.p’-DDE (ng/L)	0.23
The DaLian Bay	D8					Jul-99	surface	p.p’-DDE (ng/L)	0.22
The DaLian Bay	D10					Jul-99	surface	p.p’-DDE (ng/L)	1.01
The Liaodong Bay	L1					Jul-99	surface	p.p’-DDE (ng/L)	21.54
The Liaodong Bay	L2					Jul-99	surface	p.p’-DDE (ng/L)	ND

The Liaodong Bay	L3					Jul-99	surface	p.p'-DDE (ng/L)	6.69
The Liaodong Bay	L4					Jul-99	surface	p.p'-DDE (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	p.p'-DDE (ng/L)	ND
The Liaodong Bay	L6					Jul-99	surface	p.p'-DDE (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	p.p'-DDE (ng/L)	2.98
The Liaodong Bay	L8					Jul-99	surface	p.p'-DDE (ng/L)	ND
The DaLian Bay	D2A					Jul-99	micro-surface	p.p'-DDE (ng/L)	1.36
The DaLian Bay	D2B					Jul-99	surface	p.p'-DDE (ng/L)	0.06
The DaLian Bay	D4A					Jul-99	micro-surface	p.p'-DDE (ng/L)	2.43
The DaLian Bay	D4B					Jul-99	surface	p.p'-DDE (ng/L)	0.81
The DaLian Bay	D6A					Jul-99	micro-surface	p.p'-DDE (ng/L)	1.08
The DaLian Bay	D6B					Jul-99	surface	p.p'-DDE (ng/L)	0.15
The DaLian Bay	D8A					Jul-99	micro-surface	p.p'-DDE (ng/L)	0.14
The DaLian Bay	D8B					Jul-99	surface	p.p'-DDE (ng/L)	0.06
The DaLian Bay	D10A					Jul-99	micro-surface	p.p'-DDE (ng/L)	0.49
The DaLian Bay	D10B					Jul-99	surface	p.p'-DDE (ng/L)	0.21
The DaLian Bay	2A					Jul-99	micro-surface	p.p'-DDT (ng/L)	4.08
The DaLian Bay	2B					Jul-99	surface	p.p'-DDT (ng/L)	0.18
The DaLian Bay	4A					Jul-99	micro-surface	p.p'-DDT (ng/L)	0.48
The DaLian Bay	4B					Jul-99	surface	p.p'-DDT (ng/L)	0.22
The DaLian Bay	6A					Jul-99	micro-surface	p.p'-DDT (ng/L)	2.65
The DaLian Bay	6B					Jul-99	surface	p.p'-DDT (ng/L)	0.29
The DaLian Bay	8A					Jul-99	micro-surface	p.p'-DDT (ng/L)	0.42
The DaLian Bay	8B					Jul-99	surface	p.p'-DDT (ng/L)	0.25
The DaLian Bay	10A					Jul-99	micro-surface	p.p'-DDT (ng/L)	1.36
The DaLian Bay	10B					Jul-99	surface	p.p'-DDT (ng/L)	0.08
The DaLian Bay	8					Jul-99	micro-surface	p.p'-DDT (ng/L)	1.7

The DaLian Bay	10					Jul-99	micro-surface	p.p’-DDT (ng/L)	1.7
The DaLian Bay	2					Jul-99	micro-surface	p.p’-DDT (ng/L)	11.0
The DaLian Bay	4					Jul-99	micro-surface	p.p’-DDT (ng/L)	2.2
The DaLian Bay	6					Jul-99	micro-surface	p.p’-DDT (ng/L)	9.1
The DaLian Bay	D2					Jul-99	surface	p.p’-DDT (ng/L)	0.48
The DaLian Bay	D4					Jul-99	surface	p.p’-DDT (ng/L)	0.22
The DaLian Bay	D6					Jul-99	surface	p.p’-DDT (ng/L)	0.29
The DaLian Bay	D8					Jul-99	surface	p.p’-DDT (ng/L)	0.25
The DaLian Bay	D10					Jul-99	surface	p.p’-DDT (ng/L)	0.8
The Liaodong Bay	L1					Jul-99	surface	p.p’-DDT (ng/L)	9.29
The Liaodong Bay	L2					Jul-99	surface	p.p’-DDT (ng/L)	ND
The Liaodong Bay	L3					Jul-99	surface	p.p’-DDT (ng/L)	14.5
The Liaodong Bay	L4					Jul-99	surface	p.p’-DDT (ng/L)	ND
The Liaodong Bay	L5					Jul-99	surface	p.p’-DDT (ng/L)	0.63
The Liaodong Bay	L6					Jul-99	surface	p.p’-DDT (ng/L)	ND
The Liaodong Bay	L7					Jul-99	surface	p.p’-DDT (ng/L)	1.45
The Liaodong Bay	L8					Jul-99	surface	p.p’-DDT (ng/L)	ND
The DaLian Bay	D2A					Jul-99	micro-surface	p.p’-DDT (ng/L)	4.8
The DaLian Bay	D2B					Jul-99	surface	p.p’-DDT (ng/L)	0.18
The DaLian Bay	D4A					Jul-99	micro-surface	p.p’-DDT (ng/L)	0.48
The DaLian Bay	D4B					Jul-99	surface	p.p’-DDT (ng/L)	0.22
The DaLian Bay	D6A					Jul-99	micro-surface	p.p’-DDT (ng/L)	2.65
The DaLian Bay	D6B					Jul-99	surface	p.p’-DDT (ng/L)	0.29
The DaLian Bay	D8A					Jul-99	micro-surface	p.p’-DDT (ng/L)	0.42
The DaLian Bay	D8B					Jul-99	surface	p.p’-DDT (ng/L)	0.25
The DaLian Bay	D10A					Jul-99	micro-surface	p.p’-DDT (ng/L)	1.36
The DaLian Bay	D10B					Jul-99	surface	p.p’-DDT (ng/L)	0.8

The DaLian Bay	2A					Jul-99	micro-surface	p.p'-DDE (ng/L)	1.36
The DaLian Bay	2B					Jul-99	surface	p.p'-DDE (ng/L)	0.06
The DaLian Bay	4A					Jul-99	micro-surface	p.p'-DDE (ng/L)	2.43
The DaLian Bay	4B					Jul-99	surface	p.p'-DDE (ng/L)	0.81
The DaLian Bay	6A					Jul-99	micro-surface	p.p'-DDE (ng/L)	1.08
The DaLian Bay	6B					Jul-99	surface	p.p'-DDE (ng/L)	0.15
The DaLian Bay	8A					Jul-99	micro-surface	p.p'-DDE (ng/L)	0.14
The DaLian Bay	8B					Jul-99	surface	p.p'-DDE (ng/L)	0.06
The DaLian Bay	10A					Jul-99	micro-surface	p.p'-DDE (ng/L)	0.49
The DaLian Bay	10B					Jul-99	surface	p.p'-DDE (ng/L)	0.21
The DaLian Bay	2A					Jul-99	micro-surface	ß- HCH (ng/L)	18.46
The DaLian Bay	2B					Jul-99	surface	ß- HCH (ng/L)	0.65
The DaLian Bay	4A					Jul-99	micro-surface	ß- HCH (ng/L)	12.5
The DaLian Bay	4B					Jul-99	surface	ß- HCH (ng/L)	1.72
The DaLian Bay	6A					Jul-99	micro-surface	ß- HCH (ng/L)	1.15
The DaLian Bay	6B					Jul-99	surface	ß- HCH (ng/L)	1.24
The DaLian Bay	8A					Jul-99	micro-surface	ß- HCH (ng/L)	2.62
The DaLian Bay	8B					Jul-99	surface	ß- HCH (ng/L)	1.81
The DaLian Bay	10A					Jul-99	micro-surface	ß- HCH (ng/L)	3.39
The DaLian Bay	10B					Jul-99	surface	ß- HCH (ng/L)	1.41
The DaLian Bay	2A					Jul-99	micro-surface	α-HCH (ng/L)	1.02
The DaLian Bay	2B					Jul-99	surface	α-HCH (ng/L)	0.04
The DaLian Bay	4A					Jul-99	micro-surface	α-HCH (ng/L)	0.72
The DaLian Bay	4B					Jul-99	surface	α-HCH (ng/L)	0.13
The DaLian Bay	6A					Jul-99	micro-surface	α-HCH (ng/L)	0.82
The DaLian Bay	6B					Jul-99	surface	α-HCH (ng/L)	0.19
The DaLian Bay	8A					Jul-99	micro-surface	α-HCH (ng/L)	0.41

The DaLian Bay	8B					Jul-99	surface	α-HCH (ng/L)	0.26
The DaLian Bay	10A					Jul-99	micro-surface	α-HCH (ng/L)	0.25
The DaLian Bay	10B					Jul-99	surface	α-HCH (ng/L)	0.16
The DaLian Bay	8					Jul-99	micro-surface	α-HCH (ng/L)	1.5
The DaLian Bay	10					Jul-99	micro-surface	α-HCH (ng/L)	1.6
The DaLian Bay	2					Jul-99	micro-surface	α-HCH (ng/L)	25.5
The DaLian Bay	6					Jul-99	micro-surface	α-HCH (ng/L)	4.3
The DaLian Bay	4					Jul-99	micro-surface	α-HCH (ng/L)	5.5
The DaLian Bay	2					Jul-99	surface	α-HCH (ng/L)	0.04
The DaLian Bay	4					Jul-99	surface	α-HCH (ng/L)	0.13
The DaLian Bay	6					Jul-99	surface	α-HCH (ng/L)	0.19
The DaLian Bay	8					Jul-99	surface	α-HCH (ng/L)	0.26
The DaLian Bay	10					Jul-99	surface	α-HCH (ng/L)	0.16
The DaLian Bay	D2					Jul-99	surface	α-HCH (ng/L)	0.04
The DaLian Bay	D4					Jul-99	surface	α-HCH (ng/L)	0.13
The DaLian Bay	D6					Jul-99	surface	α-HCH (ng/L)	0.19
The DaLian Bay	D8					Jul-99	surface	α-HCH (ng/L)	0.26
The DaLian Bay	D10					Jul-99	surface	α-HCH (ng/L)	0.16
The Liaodong Bay	L1					Jul-99	surface	α-HCH (ng/L)	5.3
The Liaodong Bay	L2					Jul-99	surface	α-HCH (ng/L)	7.52
The Liaodong Bay	L3					Jul-99	surface	α-HCH (ng/L)	7.84
The Liaodong Bay	L4					Jul-99	surface	α-HCH (ng/L)	7.9
The Liaodong Bay	L5					Jul-99	surface	α-HCH (ng/L)	5.26
The Liaodong Bay	L6					Jul-99	surface	α-HCH (ng/L)	5.99
The Liaodong Bay	L7					Jul-99	surface	α-HCH (ng/L)	8.06
The Liaodong Bay	L8					Jul-99	surface	α-HCH (ng/L)	8.98
The DaLian Bay	D2A					Jul-99	micro-surface	α-HCH (ng/L)	1.02

The DaLian Bay	D2B					Jul-99	surface	α-HCH (ng/L)	0.04
The DaLian Bay	D4A					Jul-99	micro-surface	α-HCH (ng/L)	0.72
The DaLian Bay	D4B					Jul-99	surface	α-HCH (ng/L)	0.13
The DaLian Bay	D6A					Jul-99	micro-surface	α-HCH (ng/L)	0.82
The DaLian Bay	D6B					Jul-99	surface	α-HCH (ng/L)	0.19
The DaLian Bay	D8A					Jul-99	micro-surface	α-HCH (ng/L)	0.41
The DaLian Bay	D8B					Jul-99	surface	α-HCH (ng/L)	0.26
The DaLian Bay	D10A					Jul-99	micro-surface	α-HCH (ng/L)	0.25
The DaLian Bay	D10B					Jul-99	surface	α-HCH (ng/L)	0.16
The DaLian Bay	8					Jul-99	micro-surface	β-HCH (ng/L)	1.4
The DaLian Bay	10					Jul-99	micro-surface	β-HCH (ng/L)	2.4
The DaLian Bay	2					Jul-99	micro-surface	β-HCH (ng/L)	28.4
The DaLian Bay	4					Jul-99	micro-surface	β-HCH (ng/L)	7.3
The DaLian Bay	6					Jul-99	micro-surface	β-HCH (ng/L)	8.1
The DaLian Bay	2					Jul-99	surface	β-HCH (ng/L)	0.65
The DaLian Bay	4					Jul-99	surface	β-HCH (ng/L)	1.72
The DaLian Bay	6					Jul-99	surface	β-HCH (ng/L)	1.24
The DaLian Bay	8					Jul-99	surface	β-HCH (ng/L)	1.81
The DaLian Bay	10					Jul-99	surface	β-HCH (ng/L)	1.41
The DaLian Bay	D2					Jul-99	surface	β-HCH (ng/L)	0.65
The DaLian Bay	D4					Jul-99	surface	β-HCH (ng/L)	1.72
The DaLian Bay	D6					Jul-99	surface	β-HCH (ng/L)	1.24
The DaLian Bay	D8					Jul-99	surface	β-HCH (ng/L)	1.81
The DaLian Bay	D10					Jul-99	surface	β-HCH (ng/L)	1.41
The Liaodong Bay	L1					Jul-99	surface	β-HCH (ng/L)	34.22
The Liaodong Bay	L2					Jul-99	surface	β-HCH (ng/L)	29.9
The Liaodong Bay	L3					Jul-99	surface	β-HCH (ng/L)	26.5

The Liaodong Bay	L4					Jul-99	surface	β-HCH (ng/L)	27.7
The Liaodong Bay	L5					Jul-99	surface	β-HCH (ng/L)	19.3
The Liaodong Bay	L6					Jul-99	surface	β-HCH (ng/L)	18.8
The Liaodong Bay	L7					Jul-99	surface	β-HCH (ng/L)	27.5
The Liaodong Bay	L8					Jul-99	surface	β-HCH (ng/L)	31.6
The DaLian Bay	D2A					Jul-99	micro-surface	β-HCH (ng/L)	18.46
The DaLian Bay	D2B					Jul-99	surface	β-HCH (ng/L)	0.65
The DaLian Bay	D4A					Jul-99	micro-surface	β-HCH (ng/L)	12.5
The DaLian Bay	D4B					Jul-99	surface	β-HCH (ng/L)	1.72
The DaLian Bay	D6A					Jul-99	micro-surface	β-HCH (ng/L)	10.15
The DaLian Bay	D6B					Jul-99	surface	β-HCH (ng/L)	1.24
The DaLian Bay	D8A					Jul-99	micro-surface	β-HCH (ng/L)	2.62
The DaLian Bay	D8B					Jul-99	surface	β-HCH (ng/L)	1.81
The DaLian Bay	D10A					Jul-99	micro-surface	β-HCH (ng/L)	3.39
The DaLian Bay	D10B					Jul-99	surface	β-HCH (ng/L)	1.41
The DaLian Bay	2A					Jul-99	micro-surface	γ-HCH (ng/L)	6.29
The DaLian Bay	2B					Jul-99	surface	γ-HCH (ng/L)	0.24
The DaLian Bay	4A					Jul-99	micro-surface	γ-HCH (ng/L)	2.31
The DaLian Bay	4B					Jul-99	surface	γ-HCH (ng/L)	1.81
The DaLian Bay	6A					Jul-99	micro-surface	γ-HCH (ng/L)	81.11
The DaLian Bay	6B					Jul-99	surface	γ-HCH (ng/L)	1.79
The DaLian Bay	8A					Jul-99	micro-surface	γ-HCH (ng/L)	5.28
The DaLian Bay	8B					Jul-99	surface	γ-HCH (ng/L)	2.66
The DaLian Bay	10A					Jul-99	micro-surface	γ-HCH (ng/L)	4.1
The DaLian Bay	10B					Jul-99	surface	γ-HCH (ng/L)	1.93
The DaLian Bay	4					Jul-99	micro-surface	γ-HCH (ng/L)	1.3
The DaLian Bay	8					Jul-99	micro-surface	γ-HCH (ng/L)	1.9

The DaLian Bay	10					Jul-99	micro-surface	γ-HCH (ng/L)	2.2
The DaLian Bay	2					Jul-99	micro-surface	γ-HCH (ng/L)	26.2
The DaLian Bay	6					Jul-99	micro-surface	γ-HCH (ng/L)	45.3
The DaLian Bay	2					Jul-99	surface	γ-HCH (ng/L)	0.24
The DaLian Bay	4					Jul-99	surface	γ-HCH (ng/L)	1.81
The DaLian Bay	6					Jul-99	surface	γ-HCH (ng/L)	1.79
The DaLian Bay	8					Jul-99	surface	γ-HCH (ng/L)	2.66
The DaLian Bay	10					Jul-99	surface	γ-HCH (ng/L)	1.83
The DaLian Bay	D2					Jul-99	surface	γ-HCH (ng/L)	0.24
The DaLian Bay	D4					Jul-99	surface	γ-HCH (ng/L)	1.81
The DaLian Bay	D6					Jul-99	surface	γ-HCH (ng/L)	1.79
The DaLian Bay	D8					Jul-99	surface	γ-HCH (ng/L)	2.66
The DaLian Bay	D10					Jul-99	surface	γ-HCH (ng/L)	1.83
The Liaodong Bay	L1					Jul-99	surface	γ-HCH (ng/L)	7.54
The Liaodong Bay	L2					Jul-99	surface	γ-HCH (ng/L)	5.08
The Liaodong Bay	L3					Jul-99	surface	γ-HCH (ng/L)	4.26
The Liaodong Bay	L4					Jul-99	surface	γ-HCH (ng/L)	4.05
The Liaodong Bay	L5					Jul-99	surface	γ-HCH (ng/L)	1.8
The Liaodong Bay	L6					Jul-99	surface	γ-HCH (ng/L)	2.96
The Liaodong Bay	L7					Jul-99	surface	γ-HCH (ng/L)	4.57
The Liaodong Bay	L8					Jul-99	surface	γ-HCH (ng/L)	4.24
The DaLian Bay	D2A					Jul-99	micro-surface	γ-HCH (ng/L)	6.29
The DaLian Bay	D2B					Jul-99	surface	γ-HCH (ng/L)	0.24
The DaLian Bay	D4A					Jul-99	micro-surface	γ-HCH (ng/L)	2.31
The DaLian Bay	D4B					Jul-99	surface	γ-HCH (ng/L)	1.81
The DaLian Bay	D6A					Jul-99	micro-surface	γ-HCH (ng/L)	81.11
The DaLian Bay	D6B					Jul-99	surface	γ-HCH (ng/L)	1.79

The DaLian Bay	D8A					Jul-99	micro-surface	γ-HCH (ng/L)	5.28
The DaLian Bay	D8B					Jul-99	surface	γ-HCH (ng/L)	2.66
The DaLian Bay	D10A					Jul-99	micro-surface	γ-HCH (ng/L)	4.1
The DaLian Bay	D10B					Jul-99	surface	γ-HCH (ng/L)	1.83
The DaLian Bay	2A					Jul-99	micro-surface	δ-HCH (ng/L)	1
The DaLian Bay	2B					Jul-99	surface	δ-HCH (ng/L)	0.03
The DaLian Bay	4A					Jul-99	micro-surface	δ-HCH (ng/L)	0.68
The DaLian Bay	4B					Jul-99	surface	δ-HCH (ng/L)	0.2
The DaLian Bay	6A					Jul-99	micro-surface	δ-HCH (ng/L)	0.53
The DaLian Bay	6B					Jul-99	surface	δ-HCH (ng/L)	0.21
The DaLian Bay	8A					Jul-99	micro-surface	δ-HCH (ng/L)	0.13
The DaLian Bay	8B					Jul-99	surface	δ-HCH (ng/L)	0.17
The DaLian Bay	10A					Jul-99	micro-surface	δ-HCH (ng/L)	0.13
The DaLian Bay	10B					Jul-99	surface	δ-HCH (ng/L)	0.14
The DaLian Bay	8					Jul-99	micro-surface	δ-HCH (ng/L)	0.8
The DaLian Bay	10					Jul-99	micro-surface	δ-HCH (ng/L)	0.9
The DaLian Bay	6					Jul-99	micro-surface	δ-HCH (ng/L)	2.5
The DaLian Bay	4					Jul-99	micro-surface	δ-HCH (ng/L)	3.4
The DaLian Bay	2					Jul-99	micro-surface	δ-HCH (ng/L)	33.3
The DaLian Bay	2					Jul-99	surface	δ-HCH (ng/L)	0.03
The DaLian Bay	4					Jul-99	surface	δ-HCH (ng/L)	0.20
The DaLian Bay	6					Jul-99	surface	δ-HCH (ng/L)	0.21
The DaLian Bay	8					Jul-99	surface	δ-HCH (ng/L)	0.17
The DaLian Bay	10					Jul-99	surface	δ-HCH (ng/L)	0.14
The DaLian Bay	D2					Jul-99	surface	δ-HCH (ng/L)	0.03
The DaLian Bay	D4					Jul-99	surface	δ-HCH (ng/L)	0.2
The DaLian Bay	D6					Jul-99	surface	δ-HCH (ng/L)	0.21

The DaLian Bay	D8					Jul-99	surface	δ-HCH (ng/L)	0.17
The DaLian Bay	D10					Jul-99	surface	δ-HCH (ng/L)	0.14
The Liaodong Bay	L1					Jul-99	surface	δ-HCH (ng/L)	ND
The Liaodong Bay	L2					Jul-99	surface	δ-HCH (ng/L)	0.62
The Liaodong Bay	L3					Jul-99	surface	δ-HCH (ng/L)	0.65
The Liaodong Bay	L4					Jul-99	surface	δ-HCH (ng/L)	0.77
The Liaodong Bay	L5					Jul-99	surface	δ-HCH (ng/L)	0.45
The Liaodong Bay	L6					Jul-99	surface	δ-HCH (ng/L)	0.5
The Liaodong Bay	L7					Jul-99	surface	δ-HCH (ng/L)	0.64
The Liaodong Bay	L8					Jul-99	surface	δ-HCH (ng/L)	0.69
The DaLian Bay	D2A					Jul-99	micro-surface	δ-HCH (ng/L)	1
The DaLian Bay	D2B					Jul-99	surface	δ-HCH (ng/L)	0.03
The DaLian Bay	D4A					Jul-99	micro-surface	δ-HCH (ng/L)	0.68
The DaLian Bay	D4B					Jul-99	surface	δ-HCH (ng/L)	0.2
The DaLian Bay	D6A					Jul-99	micro-surface	δ-HCH (ng/L)	0.53
The DaLian Bay	D6B					Jul-99	surface	δ-HCH (ng/L)	0.21
The DaLian Bay	D8A					Jul-99	micro-surface	δ-HCH (ng/L)	0.13
The DaLian Bay	D8B					Jul-99	surface	δ-HCH (ng/L)	0.17
The DaLian Bay	D10A					Jul-99	micro-surface	δ-HCH (ng/L)	0.13
The DaLian Bay	D10B					Jul-99	surface	δ-HCH (ng/L)	0.14
The DaLian Bay	2					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	4					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	6					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	8					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	10					Jul-99	surface	Aldrin (ng/L)	ND
The DaLian Bay	2					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	4					Jul-99	surface	HCB (ng/L)	ND

The DaLian Bay	6					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	8					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	10					Jul-99	surface	HCB (ng/L)	ND
The DaLian Bay	2A					Jul-99	micro-surface	Heptachlor (ng/L)	1.5
The DaLian Bay	2B					Jul-99	surface	Heptachlor (ng/L)	0.16
The DaLian Bay	4A					Jul-99	micro-surface	Heptachlor (ng/L)	0.54
The DaLian Bay	4B					Jul-99	surface	Heptachlor (ng/L)	0.19
The DaLian Bay	6A					Jul-99	micro-surface	Heptachlor (ng/L)	10.97
The DaLian Bay	6B					Jul-99	surface	Heptachlor (ng/L)	0.23
The DaLian Bay	8A					Jul-99	micro-surface	Heptachlor (ng/L)	0.23
The DaLian Bay	8B					Jul-99	surface	Heptachlor (ng/L)	0.26
The DaLian Bay	10A					Jul-99	micro-surface	Heptachlor (ng/L)	0.04
The DaLian Bay	10B					Jul-99	surface	Heptachlor (ng/L)	0.04
The DaLian Bay	8					Jul-99	micro-surface	Heptachlor (ng/L)	0.9
The DaLian Bay	10					Jul-99	micro-surface	Heptachlor (ng/L)	1.0
The DaLian Bay	4					Jul-99	micro-surface	Heptachlor (ng/L)	2.8
The DaLian Bay	6					Jul-99	micro-surface	Heptachlor (ng/L)	47.7
The DaLian Bay	2					Jul-99	micro-surface	Heptachlor (ng/L)	9.4
The DaLian Bay	2					Jul-99	surface	Heptachlor (ng/L)	0.16
The DaLian Bay	4					Jul-99	surface	Heptachlor (ng/L)	0.19
The DaLian Bay	6					Jul-99	surface	Heptachlor (ng/L)	0.23
The DaLian Bay	8					Jul-99	surface	Heptachlor (ng/L)	0.26
The DaLian Bay	10					Jul-99	surface	Heptachlor (ng/L)	0.04
The DaLian Bay	2A					Jul-99	micro-surface	OCPs[3] (ng/L)	36.04
The DaLian Bay	2B					Jul-99	surface	OCPs[3] (ng/L)	1.47
The DaLian Bay	4A					Jul-99	micro-surface	OCPs[3] (ng/L)	20.11
The DaLian Bay	4B					Jul-99	surface	OCPs[3] (ng/L)	5.23

The DaLian Bay	6A					Jul-99	micro-surface	OCPs[3] (ng/L)	109.07
The DaLian Bay	6B					Jul-99	surface	OCPs[3] (ng/L)	4.33
The DaLian Bay	8A					Jul-99	micro-surface	OCPs[3] (ng/L)	9.47
The DaLian Bay	8B					Jul-99	surface	OCPs[3] (ng/L)	5.69
The DaLian Bay	10A					Jul-99	micro-surface	OCPs[3] (ng/L)	11.27
The DaLian Bay	10B					Jul-99	surface	OCPs[3] (ng/L)	5.6
The DaLian Bay	2					Jul-99	surface	OCPs[3] (ng/L)	1.77
The DaLian Bay	4					Jul-99	surface	OCPs[3] (ng/L)	5.23
The DaLian Bay	6					Jul-99	surface	OCPs[3] (ng/L)	4.33
The DaLian Bay	8					Jul-99	surface	OCPs[3] (ng/L)	5.69
The DaLian Bay	10					Jul-99	surface	OCPs[3] (ng/L)	5.60

Annex 2 The contents of contaminants in organisms in the key sea aeras

Area	Species	Sampling time	Contaminant (unit)	Contents
TigerBeach (Dalian)	*Venerupis Philipinarum*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0057
TigerBeach (Dalian)	*Venerupis Philipinarum*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0162
TigerBeach (Dalian)	*Venerupis Philipinarum*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.007
TigerBeach (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0036
TigerBeach (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0055
TigerBeach (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.015
Heishijiao (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0407
Heishijiao (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.004
Heishijiao (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	_
Hekou (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0103
Hekou (Dalian)	*Mytilus edulis*	1990-7～1990-12	HCB (wet weight) (10^{-6})	_
The Yalu River estuary	bivalve shellfish	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0194（0.0027～0.0484）
The Dalian Bay	bivalve shellfish	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0153（0.0066～0.0312）
The Jiaozhou Bay	bivalve shellfish	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0525(0.0024～0.0574)
Lusi	bivalve shellfish	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0252(0.0046～0.0417)
The Changjiang River estuary	bivalve shellfish	1990-7～1990-12	HCB (wet weight) (10^{-6})	0.0176（0.0036～0.0315）
Hekou (Dalian)	*Mytilus edulis*	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0016
Longwangtang(Dalian)	*Mytilus edulis*	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.006
Longwangtang(Dalian)	*Mytilus edulis*	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0016
Longwangtang(Dalian)	*Mytilus edulis*	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0023
The Yalu River estuary	bivalve shellfish	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0019（0.0003～0.00081）
The Dalian Bay	bivalve shellfish	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0045(32.35×10^{-6}～0.0161)
The Jiaozhou Bay	bivalve shellfish	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0119(0.0038～0.0224)

Lvsi	bivalve shellfish	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0039(0.0018～0.0058)
The Changjiang River estuary	bivalve shellfish	1990-7～1990-12	DDT (wet weight) (10^{-6})	0.0135（0.0044～0.0226）
The Laizhou Bay	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0315
The Laizhou Bay	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0074
The Laizhou Bay	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0016
Yantai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0151
Yantai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0041
Yantai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0023
Yantai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0018
Yantai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0039
Yantai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0016
Yantai	*Chlamys farreri*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.014
Yantai	*Chlamys farreri*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0099
Yantai	*Chlamys farreri*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0152
Weihai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0123
Weihai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0149
Weihai	*Venerupis Philipinarum*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0049
Weihai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0068
Weihai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	_
Weihai	*Mytilus edulis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0032
Ganyu	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0181
Ganyu	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0038
Ganyu	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0054
Ganyu	*Meretrix meretyix Linne*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0067
Ganyu	*Meretrix meretyix Linne*	1990-7～1990-12	PCB (wet weight) (10^{-6})	_
Ganyu	*Meretrix meretyix Linne*	1990-7～1990-12	PCB (wet weight) (10^{-6})	_

Lianyungang	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0012
Lianyungang	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0037
Lianyungang	*Arca Subcrenata* (Lischke)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.002
Sheyang (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0202
Sheyang (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0072
Sheyang (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.006
Dafeng (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.002
Dafeng (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0035
Dafeng (Jiangsu)	*Mactra guadrangularis*	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0025
Dafeng (Jiangsu)	*Cyclina Simens* (Gmelin)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0152
Dafeng (Jiangsu)	*Cyclina Simens* (Gmelin)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0045
Dafeng (Jiangsu)	*Cyclina Simens* (Gmelin)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0032
Dafeng (Jiangsu)	*Sinonovacula Constricta* (Lamarck)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0593
Dafeng (Jiangsu)	*Sinonovacula Constricta* (Lamarck)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0061
Dafeng (Jiangsu)	*Sinonovacula Constricta* (Lamarck)	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0037
The Yalu River estuary	bivalve shellfish	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0038（43.1×10^{-6}～0.0145）
The Dalian Bay	bivalve shellfish	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0046(0.0028～0.0820)
The Jiaozhou Bay	bivalve shellfish	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0066(0.0043～0.0116)
Lvsi	bivalve shellfish	1990-7～1990-12	PCB (wet weight) (10^{-6})	0.0032（43.1×10^{-6}～0.0075）

Annex 3 The contents of contaminants in sediment in the key sea aeras

Area	Number of sampling site	Sampling position				Sampling time	Length of core(cm)	Contaminant (unit)	Contents
		longitude (°)	Longitude (′)	Latitude (°)	Latitude (′)				
The Dalian Bay	1					Nov-89	surface	oils (10^{-6})	375
The Dalian Bay	2					Nov-89	surface	oils (10^{-6})	471
The Dalian Bay	3					Nov-89	surface	oils (10^{-6})	2256
The Dalian Bay	4					Nov-89	surface	oils (10^{-6})	143
The Dalian Bay	5					Nov-89	surface	oils (10^{-6})	1336
The Dalian Bay	6					Nov-89	surface	oils (10^{-6})	1247
The Dalian Bay	7					Nov-89	surface	oils (10^{-6})	1037
The Dalian Bay	8					Nov-89	surface	oils (10^{-6})	255
The Dalian Bay	9					Nov-89	surface	oils (10^{-6})	187
The Dalian Bay	10					Nov-89	surface	oils (10^{-6})	165
The Dalian Bay	1					Nov-91	surface	oils (10^{-6})	723
The Dalian Bay	2					Nov-91	surface	oils (10^{-6})	440
The Dalian Bay	3					Nov-91	surface	oils (10^{-6})	407
The Dalian Bay	4					Nov-91	surface	oils (10^{-6})	495
The Dalian Bay	5					Nov-91	surface	oils (10^{-6})	1421
The Dalian Bay	6					Nov-91	surface	oils (10^{-6})	1366
The Dalian Bay	7					Nov-91	surface	oils (10^{-6})	212
The Dalian Bay	8					Nov-91	surface	oils (10^{-6})	418
The Dalian Bay	9					Nov-91	surface	oils (10^{-6})	60
The Yellow Sea	Y1001					Aug-99	surface	∑MP[4] (ng/g)	101.9
The Yellow Sea	Y1004					Aug-99	surface	∑MP[4] (ng/g)	77.9

The Yellow Sea	Y1007					Aug-99	surface	∑MP[4] (ng/g)	153.7
The Yellow Sea	Ya003					Aug-99	surface	∑MP[4] (ng/g)	49.7
The Yellow Sea	Ya005					Aug-99	surface	∑MP[4] (ng/g)	91.2
The Yellow Sea	Yb003					Aug-99	surface	∑MP[4] (ng/g)	32.8
The Yellow Sea	Yb005					Aug-99	surface	∑MP[4] (ng/g)	26.8
The Yellow Sea	Y1001					Aug-99	surface	PAHs[5] (ng/g)	495.5
The Yellow Sea	Y1004					Aug-99	surface	PAHs[5] (ng/g)	385.2
The Yellow Sea	Y1007					Aug-99	surface	PAHs[5] (ng/g)	776.3
The Yellow Sea	Ya003					Aug-99	surface	PAHs[5] (ng/g)	325.8
The Yellow Sea	Ya005					Aug-99	surface	PAHs[5] (ng/g)	531.6
The Yellow Sea	Yb003					Aug-99	surface	PAHs[5] (ng/g)	228.2
The Yellow Sea	Yb005					Aug-99	surface	PAHs[5] (ng/g)	222.1
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Acenaphthylene (ng/g)	3.2
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Acenaphthylene (ng/g)	4.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Acenaphthylene (ng/g)	ND
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Acenaphthylene (ng/g)	13.1
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Acenaphthylene (ng/g)	9.4
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Acenaphthylene (ng/g)	3
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Acenaphthylene (ng/g)	6.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Acenaphthylene (ng/g)	ND
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Acenaphthylene (ng/g)	3.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Acenaphthylene (ng/g)	ND
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Acenaphthylene (ng/g)	3.1
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Acenaphthylene (ng/g)	39.3
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Acenaphthylene (ng/g)	3.3
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Al (μg/g)	39548
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Al (μg/g)	45695

The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Al (μg/g)	125587
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Al (μg/g)	49657
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Al (μg/g)	38785
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Al (μg/g)	44903
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Al (μg/g)	35373
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Al (μg/g)	14272
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Al (μg/g)	54949
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Al (μg/g)	36684
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Al (μg/g)	41646
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Al (μg/g)	31950
The Dalian Bay	D1					Jul-99	surface	Aldrin (10^{-9})	0.86
The Dalian Bay	D2					Jul-99	surface	Aldrin (10^{-9})	0.13
The Dalian Bay	D3					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	D4					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	D5					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	D6					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	D7					Jul-99	surface	Aldrin (10^{-9})	0.11
The Dalian Bay	D8					Jul-99	surface	Aldrin (10^{-9})	0.29
The Dalian Bay	D9					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	Aldrin (10^{-9})	ND
The Dalian Bay	2					Jul-97	surface	Aldrin (10^{-9})	0.860
The Dalian Bay	3					Jul-97	surface	Aldrin (10^{-9})	0.127
The Dalian Bay	9					Jul-97	surface	Aldrin (10^{-9})	0.286
The Dalian Bay	12					Jul-97	surface	Aldrin (10^{-9})	0.113
The Dalian Bay	17					Jul-97	surface	Aldrin (10^{-9})	0.996
The Dalian Bay	18					Jul-97	surface	Aldrin (10^{-9})	0.117
The Dalian Bay	20					Jul-97	surface	Aldrin (10^{-9})	0.143

The Yellow Sea	Y1001					Aug-99	surface	Anthracene (ng/g)	5.9
The Yellow Sea	Y1004					Aug-99	surface	Anthracene (ng/g)	9.5
The Yellow Sea	Y1007					Aug-99	surface	Anthracene (ng/g)	12.1
The Yellow Sea	Ya003					Aug-99	surface	Anthracene (ng/g)	11.5
The Yellow Sea	Ya005					Aug-99	surface	Anthracene (ng/g)	4.2
The Yellow Sea	Yb003					Aug-99	surface	Anthracene (ng/g)	2.6
The Yellow Sea	Yb005					Aug-99	surface	Anthracene (ng/g)	1.9
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Anthracene (ng/g)	14.9
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Anthracene (ng/g)	20
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Anthracene (ng/g)	5.8
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Anthracene (ng/g)	35.6
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Anthracene (ng/g)	70.6
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Anthracene (ng/g)	9.5
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Anthracene (ng/g)	20.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Anthracene (ng/g)	2.8
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Anthracene (ng/g)	2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Anthracene (ng/g)	11
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Anthracene (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Anthracene (ng/g)	122.8
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Anthracene (ng/g)	8.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	As (μg/g)	5.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	As (μg/g)	0.74
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	As (μg/g)	9.47
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	As (μg/g)	7.31
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	As (μg/g)	9.05
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	As (μg/g)	9.76
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	As (μg/g)	8.55

The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	As (μg/g)	7.52
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	As (μg/g)	8.66
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	As (μg/g)	7.98
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	As (μg/g)	7.38
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	As (μg/g)	7.27
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	As (μg/g)	9.19
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	As (μg/g)	8.19
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	As (μg/g)	8.02
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	As (μg/g)	6.06
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	As (μg/g)	5.89
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	As (μg/g)	5.92
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	As (μg/g)	6.28
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	As (μg/g)	5.89
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	As (μg/g)	7.13
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	As (μg/g)	5.43
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	As (μg/g)	7.23
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	As (μg/g)	7.13
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	As (μg/g)	9.93
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	As (μg/g)	4.82
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	As (μg/g)	4.78
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	As (μg/g)	8.82
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	As (μg/g)	8.79
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	As (μg/g)	9.44
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	As (μg/g)	9.47
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	As (μg/g)	9.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	As (μg/g)	9.13
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	As (μg/g)	8.41

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	As (μg/g)	9.44
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	As (μg/g)	9.88
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	As (μg/g)	9.01
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	As (μg/g)	7.75
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	As (μg/g)	6.88
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	As (μg/g)	7.85
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	As (μg/g)	7.63
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	As (μg/g)	6.07
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	As (μg/g)	8.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	As (μg/g)	8.38
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	As (μg/g)	7.72
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	As (μg/g)	5.94
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	As (μg/g)	5.75
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	As (μg/g)	5.66
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	As (μg/g)	6.85
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	As (μg/g)	5.57
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	As (μg/g)	4.41
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	As (μg/g)	4.75
The Jiaozhou Bay		120	15	36	7	Nov-90	surface	As(III) (10^{-9} mol/dm^3)	0.1
The Jiaozhou Bay		120	15	36	7	Nov-90	?	As(III) (10^{-9} mol/dm^3)	0.2
The Jiaozhou Bay		120	15	36	7	May-91	surface	As(III) (10^{-9} mol/dm^3)	0.2
The Jiaozhou Bay		120	15	36	7	May-91	?	As(III) (10^{-9} mol/dm^3)	0.3
The Jiaozhou Bay		120	15	36	7	Aug-91	surface	As(III) (10^{-9} mol/dm^3)	0.1
The Jiaozhou Bay		120	15	36	7	Aug-91	?	As(III) (10^{-9} mol/dm^3)	0.1
The Yellow Sea	Y1001					Aug-99	surface	Benzo(a)Anthracene （ng/g)	14.8
The Yellow Sea	Y1004					Aug-99	surface	Benzo(a)Anthracene (ng/g)	14.7
The Yellow Sea	Y1007					Aug-99	surface	Benzo(a)Anthracene (ng/g)	18.1

The Yellow Sea	Ya003					Aug-99	surface	Benzo(a)Anthracene (ng/g)	4.8
The Yellow Sea	Ya005					Aug-99	surface	Benzo(a)Anthracene (ng/g)	21.5
The Yellow Sea	Yb003					Aug-99	surface	Benzo(a)Anthracene (ng/g)	8.9
The Yellow Sea	Yb005					Aug-99	surface	Benzo(a)Anthracene (ng/g)	3.1
The Yellow Sea	Y1001					Aug-99	surface	Benzo(a)Pyrene (ng/g)	33.6
The Yellow Sea	Y1004					Aug-99	surface	Benzo(a)Pyrene (ng/g)	27.4
The Yellow Sea	Y1007					Aug-99	surface	Benzo(a)Pyrene (ng/g)	71.2
The Yellow Sea	Ya003					Aug-99	surface	Benzo(a)Pyrene (ng/g)	42
The Yellow Sea	Ya005					Aug-99	surface	Benzo(a)Pyrene (ng/g)	31.2
The Yellow Sea	Yb003					Aug-99	surface	Benzo(a)Pyrene (ng/g)	21.5
The Yellow Sea	Yb005					Aug-99	surface	Benzo(a)Pyrene (ng/g)	32.3
The Yellow Sea	Y1001					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	28.2
The Yellow Sea	Y1004					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	25.8
The Yellow Sea	Y1007					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	45.7
The Yellow Sea	Ya003					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	36
The Yellow Sea	Ya005					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	25.5
The Yellow Sea	Yb003					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	18.8
The Yellow Sea	Yb005					Aug-99	surface	Benzo(b)Fluoranthene (ng/g)	30.6
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(a)Anthracene (ng/g)	25.6
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(a)Anthracene (ng/g)	29.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(a)Anthracene (ng/g)	17.7
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(a)Anthracene (ng/g)	77.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(a)Anthracene (ng/g)	172.7
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(a)Anthracene (ng/g)	27.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(a)Anthracene (ng/g)	90.1
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(a)Anthracene (ng/g)	7.3
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(a)Anthracene (ng/g)	15.8

The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(a)Anthracene (ng/g)	8.5
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(a)Anthracene (ng/g)	2.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(a)Anthracene (ng/g)	318
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(a)Anthracene (ng/g)	39.8
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(a)Pyrene (ng/g)	12.2
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(a)Pyrene (ng/g)	14.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(a)Pyrene (ng/g)	12
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(a)Pyrene (ng/g)	43.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(a)Pyrene (ng/g)	72.7
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(a)Pyrene (ng/g)	14.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(a)Pyrene (ng/g)	50.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(a)Pyrene (ng/g)	7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(a)Pyrene (ng/g)	10
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(a)Pyrene (ng/g)	5.4
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(a)Pyrene (ng/g)	2.4
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(a)Pyrene (ng/g)	148.3
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(a)Pyrene (ng/g)	17.7
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(b)Fluoranthene (ng/g)	31.7
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(b)Fluoranthene (ng/g)	35.3
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(b)Fluoranthene (ng/g)	28.9
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	60.8
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	101.8
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	21.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	65.7
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	20.1
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	13.6

The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(b)Fluoranthene (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(b)Fluoranthene (ng/g)	256.2
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(b)Fluoranthene (ng/g)	30.4
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(e)Pyrene (ng/g)	19.5
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(e)Pyrene (ng/g)	24.7
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(e)Pyrene (ng/g)	16.9
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(e)Pyrene (ng/g)	50.7
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(e)Pyrene (ng/g)	89.7
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(e)Pyrene (ng/g)	18.8
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(e)Pyrene (ng/g)	55.6
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(e)Pyrene (ng/g)	10.4
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(e)Pyrene (ng/g)	12.6
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(e)Pyrene (ng/g)	10.9
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(e)Pyrene (ng/g)	2.4
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(e)Pyrene (ng/g)	215.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(e)Pyrene (ng/g)	25.3
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(gih)Pyrene (ng/g)	2.4
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(gih)Pyrene (ng/g)	3.5
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(gih)Pyrene (ng/g)	7.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	16.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	65.4
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	11.7
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	43
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	10
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	8.1
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(gih)Pyrene (ng/g)	Nd

The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(gih)Pyrene (ng/g)	87.6
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(gih)Pyrene (ng/g)	20.2
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Benzo(k)Fluoranthene (ng/g)	7.3
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Benzo(k)Fluoranthene (ng/g)	14.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Benzo(k)Fluoranthene (ng/g)	9.6
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	43.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	55.7
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	11.7
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	40.4
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	10.4
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	7.5
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	8.1
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Benzo(k)Fluoranthene (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(k)Fluoranthene (ng/g)	77.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Benzo(k)Fluoranthene (ng/g)	17.7
The Yellow Sea		36	0	124	0	May-98	31-37	BFl / BFl+BeP[6]	0.7
The Yellow Sea		36	0	124	0	May-98	0-1	BFl / BFl+BeP[6]	0.2
The Yellow Sea		36	0	124	0	May-98	1-2	BFl / BFl+BeP[6]	0
The Yellow Sea		36	0	124	0	May-98	2-4	BFl / BFl+BeP[6]	0.6
The Yellow Sea		36	0	124	0	May-98	5-7	BFl / BFl+BeP[6]	-
The Yellow Sea		36	0	124	0	May-98	11-13	BFl / BFl+BeP[6]	0.3
The Yellow Sea		36	0	124	0	May-98	21-26	BFl / BFl+BeP[6]	-
The Yellow Sea		34	0	124	0	May-98	0-1	BFl / BFl+BeP[6]	0.2
The Yellow Sea		34	0	124	0	May-98	2-3	BFl / BFl+BeP[6]	0.4
The Yellow Sea		34	0	124	0	May-98	4-5	BFl / BFl+BeP[6]	0.5
The Yellow Sea		34	0	124	0	May-98	8-9	BFl / BFl+BeP[6]	0.6
The Yellow Sea		34	0	124	0	May-98	17-19	BFl / BFl+BeP[6]	0

The Yellow Sea		34	0	124	0	May-98	27-30	BFl / BFl+BeP[6]	0.4
The Yellow Sea		34	0	124	0	May-98	36-39	BFl / BFl+BeP[6]	0.2
The Yellow Sea		34	0	124	0	May-98	45-47.5	BFl / BFl+BeP[6]	0.2
The Dalian Bay	2					Jul-97	surface	BHCs[2] (10^{-9})	6.515
The Dalian Bay	3					Jul-97	surface	BHCs[2] (10^{-9})	3.212
The Dalian Bay	7					Jul-97	surface	BHCs[2] (10^{-9})	1.789
The Dalian Bay	9					Jul-97	surface	BHCs[2] (10^{-9})	3.004
The Dalian Bay	10					Jul-97	surface	BHCs[2] (10^{-9})	1.215
The Dalian Bay	12					Jul-97	surface	BHCs[2] (10^{-9})	2.451
The Dalian Bay	14					Jul-97	surface	BHCs[2] (10^{-9})	1.109
The Dalian Bay	17					Jul-97	surface	BHCs[2] (10^{-9})	7.959
The Dalian Bay	18					Jul-97	surface	BHCs[2] (10^{-9})	1.830
The Dalian Bay	20					Jul-97	surface	BHCs[2] (10^{-9})	2.540
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Bi (μg/g)	0.13
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Bi (μg/g)	0.13
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Bi (μg/g)	0.62
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Bi (μg/g)	0.44
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Bi (μg/g)	0.32
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Bi (μg/g)	0.52
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Bi (μg/g)	0.44
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Bi (μg/g)	0.33
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Bi (μg/g)	0.31
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Bi (μg/g)	0.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Bi (μg/g)	0.16
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Bi (μg/g)	0.21
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Bi (μg/g)	0.18

The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Bi (μg/g)	0.25
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Bi (μg/g)	0.29
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Bi (μg/g)	0.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Bi (μg/g)	0.15
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Bi (μg/g)	0.15
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Bi (μg/g)	0.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Bi (μg/g)	0.18
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Bi (μg/g)	0.27
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Bi (μg/g)	0.25
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Bi (μg/g)	0.25
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Bi (μg/g)	0.19
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Bi (μg/g)	0.38
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Bi (μg/g)	0.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Bi (μg/g)	0.31
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Bi (μg/g)	0.33
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Bi (μg/g)	0.39
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Bi (μg/g)	0.25
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Bi (μg/g)	0.25
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Bi (μg/g)	0.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Bi (μg/g)	0.23
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Bi (μg/g)	0.21
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Bi (μg/g)	0.19
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Bi (μg/g)	0.16

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Bi (μg/g)	0.14
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Bi (μg/g)	0.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Bi (μg/g)	0.12
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Bi (μg/g)	0.18
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Bi (μg/g)	0.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Bi (μg/g)	0.19
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Bi (μg/g)	0.21
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Bi (μg/g)	0.18
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Bi (μg/g)	0.21
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Bi (μg/g)	0.23
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Bi (μg/g)	0.26
The Yellow Sea		123	0	37	0.4	May-98	?	biogenic silica (%Si)	0.29
The Yellow Sea		121	0.1	35	59.9	May-98	?	biogenic silica (%Si)	0.41
The Yellow Sea		122	0.4	35	59.7	May-98	?	biogenic silica (%Si)	0.46
The Yellow Sea		121	59.9	35	0	May-98	?	biogenic silica (%Si)	0.42
The Yellow Sea		123	59.9	35	0.2	May-98	?	biogenic silica (%Si)	0.35
The Yellow Sea		122	14.4	32	42.6	May-98	?	biogenic silica (%Si)	0.3
The Yellow Sea		123	45.1	33	4	May-98	?	biogenic silica (%Si)	0.4
The Yellow Sea		125	0	33	19.7	May-98	?	biogenic silica (%Si)	0.4
The Yellow Sea		123	59.2	32	16.5	May-98	?	biogenic silica (%Si)	0.42
The Yellow Sea		125	45	33	3	May-98	?	biogenic silica (%Si)	0.21
The Yellow Sea		123	20	32	19.2	May-98	?	biogenic silica (%Si)	0.44
The Yellow Sea	Y1001					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	21.5
The Yellow Sea	Y1004					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	19.4
The Yellow Sea	Y1007					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	45.7
The Yellow Sea	Ya003					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	28
The Yellow Sea	Ya005					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	19.8

The Yellow Sea	Yb003					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	13.4
The Yellow Sea	Yb005					Aug-99	surface	Benzo(k)Fluoranthene (ng/g)	22.6
The Yellow Sea	Y1001					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.5
The Yellow Sea	Y1004					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.5
The Yellow Sea	Y1007					Aug-99	surface	Benzo(gih)Perylene (ng/g)	1.1
The Yellow Sea	Ya003					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.7
The Yellow Sea	Ya005					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.4
The Yellow Sea	Yb003					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.4
The Yellow Sea	Yb005					Aug-99	surface	Benzo(gih)Perylene (ng/g)	0.6
The Yellow Sea		36	0	124	0	May-98	31-37	Bz[a]A / Bz[a]A+Chry[7]	0.7
The Yellow Sea		36	0	124	0	May-98	0-1	Bz[a]A / Bz[a]A+Chry[7]	0.4
The Yellow Sea		36	0	124	0	May-98	1-2	Bz[a]A / Bz[a]A+Chry[7]	0.7
The Yellow Sea		36	0	124	0	May-98	2-4	Bz[a]A / Bz[a]A+Chry[7]	0.7
The Yellow Sea		36	0	124	0	May-98	5-7	Bz[a]A / Bz[a]A+Chry[7]	0.7
The Yellow Sea		36	0	124	0	May-98	11-13	Bz[a]A / Bz[a]A+Chry[7]	0.5
The Yellow Sea		36	0	124	0	May-98	21-26	Bz[a]A / Bz[a]A+Chry[7]	0.7
The Yellow Sea		34	0	124	0	May-98	0-1	Bz[a]A / Bz[a]A+Chry[7]	0.3
The Yellow Sea		34	0	124	0	May-98	2-3	Bz[a]A / Bz[a]A+Chry[7]	0.5
The Yellow Sea		34	0	124	0	May-98	4-5	Bz[a]A / Bz[a]A+Chry[7]	0.5
The Yellow Sea		34	0	124	0	May-98	8-9	Bz[a]A / Bz[a]A+Chry[7]	0.4
The Yellow Sea		34	0	124	0	May-98	17-19	Bz[a]A / Bz[a]A+Chry[7]	0.2
The Yellow Sea		34	0	124	0	May-98	27-30	Bz[a]A / Bz[a]A+Chry[7]	0.5
The Yellow Sea		34	0	124	0	May-98	36-39	Bz[a]A / Bz[a]A+Chry[7]	0.3
The Yellow Sea		34	0	124	0	May-98	45-47.5	Bz[a]A / Bz[a]A+Chry[7]	0.2
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Ca (μg/g)	1720.7
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Ca (μg/g)	1957.4
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Ca (μg/g)	4051.9

The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Ca (μg/g)	1643.8
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Ca (μg/g)	1037.3
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Ca (μg/g)	1114.9
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Ca (μg/g)	999.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Ca (μg/g)	411.7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Ca (μg/g)	923.7
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Ca (μg/g)	806.4
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Ca (μg/g)	1308.1
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Ca (μg/g)	1520.5
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Cd (μg/g)	0.038
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Cd (μg/g)	0.011
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Cd (μg/g)	0.067
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Cd (μg/g)	0.003
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Cd (μg/g)	0.023
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Cd (μg/g)	0.007
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Cd (μg/g)	0.011
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Cd (μg/g)	0.009
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Cd (μg/g)	N
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Cd (μg/g)	0.003
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Cd (μg/g)	0.009
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Cd (μg/g)	0.008
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Cd (μg/g)	N
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Cd (μg/g)	N
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Cd (μg/g)	0.098
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Cd (μg/g)	N
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Cd (μg/g)	0.017
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Cd (μg/g)	0.078

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Cd (μg/g)	0.048
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Cd (μg/g)	0.018
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Cd (μg/g)	0.012
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Cd (μg/g)	0.017
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Cd (μg/g)	0.017
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Cd (μg/g)	0.015
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Cd (μg/g)	0.007
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Cd (μg/g)	0.026
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Cd (μg/g)	0.012
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Cd (μg/g)	0.022
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Cd (μg/g)	0.024
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Cd (μg/g)	0.026
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Cd (μg/g)	0.022
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Cd (μg/g)	0.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Cd (μg/g)	0.02
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Cd (μg/g)	0.009
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Cd (μg/g)	0.019
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Cd (μg/g)	0.008
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Cd (μg/g)	0.011
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Cd (μg/g)	0.018
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Cd (μg/g)	N
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Cd (μg/g)	0.002
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Cd (μg/g)	0.014
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Cd (μg/g)	0.004
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Cd (μg/g)	0.01
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Cd (μg/g)	N
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Cd (μg/g)	N

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Cd (µg/g)	N
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Cd (µg/g)	N
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Cd (µg/g)	0.01
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Cd (µg/g)	N
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Cd (µg/g)	0.064
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Cd (µg/g)	0.0024
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Cd (µg/g)	0.005
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Cd (µg/g)	1.042
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Cd (µg/g)	0.73
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Cd (µg/g)	2.34
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Cd (µg/g)	1.06
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Cd (µg/g)	1.17
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Cd (µg/g)	0.963
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Cd (µg/g)	0.519
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Cd (µg/g)	0.194
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Cd (µg/g)	0.663
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Cd (µg/g)	0.51
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Cd (µg/g)	0.48
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Cd (µg/g)	1.965
The Yellow Sea	Y1001					Aug-99	surface	Ch (ng/g)	31.2
The Yellow Sea	Y1004					Aug-99	surface	Ch (ng/g)	25.6
The Yellow Sea	Y1007					Aug-99	surface	Ch (ng/g)	30.1
The Yellow Sea	Ya003					Aug-99	surface	Ch (ng/g)	7.9
The Yellow Sea	Ya005					Aug-99	surface	Ch (ng/g)	31.9
The Yellow Sea	Yb003					Aug-99	surface	Ch (ng/g)	15.6
The Yellow Sea	Yb005					Aug-99	surface	Ch (ng/g)	6.7
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Chrysene (ng/g)	48.6

The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Chrysene (ng/g)	59.2
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Chrysene (ng/g)	27.8
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Chrysene (ng/g)	131
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Chrysene (ng/g)	129.5
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Chrysene (ng/g)	27.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Chrysene (ng/g)	76.8
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Chrysene (ng/g)	14.6
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Chrysene (ng/g)	18.4
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Chrysene (ng/g)	17.1
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Chrysene (ng/g)	2.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Chrysene (ng/g)	286.2
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Chrysene (ng/g)	45.1
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Coronene (ng/g)	24.2
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Coronene (ng/g)	4.7
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Coronene (ng/g)	15.2
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Coronene (ng/g)	5
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Coronene (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Coronene (ng/g)	6.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Coronene (ng/g)	12.7
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Cr (μg/g)	90.6
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Cr (μg/g)	159.2

The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Cr (µg/g)	370
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Cr (µg/g)	131.2
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Cr (µg/g)	133
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Cr (µg/g)	93.5
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Cr (µg/g)	75.3
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Cr (µg/g)	26.8
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Cr (µg/g)	117.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Cr (µg/g)	79.8
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Cr (µg/g)	79.1
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Cr (µg/g)	160.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Cu (µg/g)	46.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Cu (µg/g)	36
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Cu (µg/g)	39.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Cu (µg/g)	35.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Cu (µg/g)	28.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Cu (µg/g)	38.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Cu (µg/g)	39.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Cu (µg/g)	35.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Cu (µg/g)	40
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Cu (µg/g)	35.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Cu (µg/g)	31.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Cu (µg/g)	38
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Cu (µg/g)	49.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Cu (µg/g)	45.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Cu (µg/g)	30.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Cu (µg/g)	41.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Cu (µg/g)	24.4

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Cu (μg/g)	50.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Cu (μg/g)	45.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Cu (μg/g)	40.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Cu (μg/g)	36.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Cu (μg/g)	28.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Cu (μg/g)	30.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Cu (μg/g)	28.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Cu (μg/g)	26.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Cu (μg/g)	32.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Cu (μg/g)	20.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Cu (μg/g)	16.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Cu (μg/g)	29.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Cu (μg/g)	28.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Cu (μg/g)	28
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Cu (μg/g)	28.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Cu (μg/g)	25.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Cu (μg/g)	26.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Cu (μg/g)	48.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Cu (μg/g)	29.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Cu (μg/g)	32.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Cu (μg/g)	30.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Cu (μg/g)	25.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Cu (μg/g)	27.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Cu (μg/g)	32.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Cu (μg/g)	30.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Cu (μg/g)	33.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Cu (μg/g)	38.4

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Cu (µg/g)	34.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Cu (µg/g)	33.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Cu (µg/g)	37.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Cu (µg/g)	25.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Cu (µg/g)	35.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Cu (µg/g)	28.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Cu (µg/g)	25.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Cu (µg/g)	23.8
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Cu (µg/g)	42.2
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Cu (µg/g)	29.46
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Cu (µg/g)	33.05
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Cu (µg/g)	17.68
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Cu (µg/g)	21.58
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Cu (µg/g)	3.815
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Cu (µg/g)	4.785
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Cu (µg/g)	8.75
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Cu (µg/g)	9.55
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Cu (µg/g)	2.92
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Cu (µg/g)	5.25
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Cu (µg/g)	127.55
The Yellow Sea	Y1001					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	1.3
The Yellow Sea	Y1004					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	1.1
The Yellow Sea	Y1007					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	2.6
The Yellow Sea	Ya003					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	1.6
The Yellow Sea	Ya005					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	1.3
The Yellow Sea	Yb003					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	0.8
The Yellow Sea	Yb005					Aug-99	surface	Dibenzo(a,b)anthracene (ng/g)	1.3

The Dalian Bay	1					Jul-99	surface	p.p'-DDD (10^{-9})	1.94
The Dalian Bay	2					Jul-99	surface	p.p'-DDD (10^{-9})	0.73
The Dalian Bay	3					Jul-99	surface	p.p'-DDD (10^{-9})	0.61
The Dalian Bay	4					Jul-99	surface	p.p'-DDD (10^{-9})	0.42
The Dalian Bay	5					Jul-99	surface	p.p'-DDD (10^{-9})	0.32
The Dalian Bay	6					Jul-99	surface	p.p'-DDD (10^{-9})	2.24
The Dalian Bay	7					Jul-99	surface	p.p'-DDD (10^{-9})	0.55
The Dalian Bay	8					Jul-99	surface	p.p'-DDD (10^{-9})	0.63
The Dalian Bay	9					Jul-99	surface	p.p'-DDD (10^{-9})	0.87
The Dalian Bay	10					Jul-99	surface	p.p'-DDD (10^{-9})	0.91
The Dalian Bay	1					Jul-99	surface	p.p'-DDE (10^{-9})	1.11
The Dalian Bay	2					Jul-99	surface	p.p'-DDE (10^{-9})	0.48
The Dalian Bay	3					Jul-99	surface	p.p'-DDE (10^{-9})	0.29
The Dalian Bay	4					Jul-99	surface	p.p'-DDE (10^{-9})	0.48
The Dalian Bay	5					Jul-99	surface	p.p'-DDE (10^{-9})	0.29
The Dalian Bay	6					Jul-99	surface	p.p'-DDE (10^{-9})	1.25
The Dalian Bay	7					Jul-99	surface	p.p'-DDE (10^{-9})	0.42
The Dalian Bay	8					Jul-99	surface	p.p'-DDE (10^{-9})	0.79
The Dalian Bay	9					Jul-99	surface	p.p'-DDE (10^{-9})	0.19
The Dalian Bay	10					Jul-99	surface	p.p'-DDE (10^{-9})	0.50
The Dalian Bay	1					Jul-99	surface	p.p'-DDT (10^{-9})	1.04
The Dalian Bay	2					Jul-99	surface	p.p'-DDT (10^{-9})	0.26
The Dalian Bay	3					Jul-99	surface	p.p'-DDT (10^{-9})	1.01
The Dalian Bay	4					Jul-99	surface	p.p'-DDT (10^{-9})	0.15
The Dalian Bay	5					Jul-99	surface	p.p'-DDT (10^{-9})	0.12
The Dalian Bay	6					Jul-99	surface	p.p'-DDT (10^{-9})	3.23
The Dalian Bay	7					Jul-99	surface	p.p'-DDT (10^{-9})	0.82

The Dalian Bay	8					Jul-99	surface	p.p'-DDT (10^{-9})	0.25
The Dalian Bay	9					Jul-99	surface	p.p'-DDT (10^{-9})	0.37
The Dalian Bay	10					Jul-99	surface	p.p'-DDT (10^{-9})	0.79
The Dalian Bay	2					Jul-97	surface	DDTs[1] (10^{-9})	4.095
The Dalian Bay	3					Jul-97	surface	DDTs[1] (10^{-9})	1.477
The Dalian Bay	7					Jul-97	surface	DDTs[1] (10^{-9})	0.727
The Dalian Bay	9					Jul-97	surface	DDTs[1] (10^{-9})	1.661
The Dalian Bay	10					Jul-97	surface	DDTs[1] (10^{-9})	1.916
The Dalian Bay	12					Jul-97	surface	DDTs[1] (10^{-9})	1.794
The Dalian Bay	14					Jul-97	surface	DDTs[1] (10^{-9})	1.431
The Dalian Bay	17					Jul-97	surface	DDTs[1] (10^{-9})	5.723
The Dalian Bay	18					Jul-97	surface	DDTs[1] (10^{-9})	1.056
The Dalian Bay	20					Jul-97	surface	DDTs[1] (10^{-9})	2.204
The Dalian Bay	D1					Jul-99	surface	DDTs[1] (10^{-9})	4.09
The Dalian Bay	D2					Jul-99	surface	DDTs[1] (10^{-9})	1.47
The Dalian Bay	D3					Jul-99	surface	DDTs[1] (10^{-9})	1.91
The Dalian Bay	D4					Jul-99	surface	DDTs[1] (10^{-9})	1.05
The Dalian Bay	D5					Jul-99	surface	DDTs[1] (10^{-9})	0.73
The Dalian Bay	D6					Jul-99	surface	DDTs[1] (10^{-9})	6.72
The Dalian Bay	D7					Jul-99	surface	DDTs[1] (10^{-9})	1.79
The Dalian Bay	D8					Jul-99	surface	DDTs[1] (10^{-9})	1.67
The Dalian Bay	D9					Jul-99	surface	DDTs[1] (10^{-9})	1.43
The Dalian Bay	D10					Jul-99	surface	DDTs[1] (10^{-9})	2.2
The Dalian Bay	1					Jul-99	surface	DDTs[1] (10^{-9})	4.09
The Dalian Bay	2					Jul-99	surface	DDTs[1] (10^{-9})	1.47
The Dalian Bay	3					Jul-99	surface	DDTs[1] (10^{-9})	1.91
The Dalian Bay	4					Jul-99	surface	DDTs[1] (10^{-9})	1.05

The Dalian Bay	5					Jul-99	surface	DDTs[1] (10^{-9})	0.73
The Dalian Bay	6					Jul-99	surface	DDTs[1] (10^{-9})	6.72
The Dalian Bay	7					Jul-99	surface	DDTs[1] (10^{-9})	1.79
The Dalian Bay	8					Jul-99	surface	DDTs[1] (10^{-9})	1.67
The Dalian Bay	9					Jul-99	surface	DDTs[1] (10^{-9})	1.43
The Dalian Bay	10					Jul-99	surface	DDTs[1] (10^{-9})	2.20
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	3.4
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	21.8
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	2.3
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	2.5
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Dibenzo(a,h)anthracene (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Dibenzo(a,h)anthracene (ng/g)	33.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Dibenzo(a,h)anthracene (ng/g)	5.1
The Dalian Bay	D1					Jul-99	surface	Dieldrin (10^{-9})	0.46
The Dalian Bay	D2					Jul-99	surface	Dieldrin (10^{-9})	0.04
The Dalian Bay	D3					Jul-99	surface	Dieldrin (10^{-9})	0.14
The Dalian Bay	D4					Jul-99	surface	Dieldrin (10^{-9})	ND
The Dalian Bay	D5					Jul-99	surface	Dieldrin (10^{-9})	0.08
The Dalian Bay	D6					Jul-99	surface	Dieldrin (10^{-9})	ND
The Dalian Bay	D7					Jul-99	surface	Dieldrin (10^{-9})	ND
The Dalian Bay	D8					Jul-99	surface	Dieldrin (10^{-9})	0.23

The Dalian Bay	D9					Jul-99	surface	Dieldrin (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	Dieldrin (10^{-9})	ND
The Dalian Bay	2					Jul-97	surface	Dieldrin (10^{-9})	0.456
The Dalian Bay	3					Jul-97	surface	Dieldrin (10^{-9})	0.043
The Dalian Bay	7					Jul-97	surface	Dieldrin (10^{-9})	0.076
The Dalian Bay	12					Jul-97	surface	Dieldrin (10^{-9})	0.144
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Acenaphthenequinone (ng/g)	3.2
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Acenaphthenequinone (ng/g)	4.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Acenaphthenequinone (ng/g)	Nd
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Acenaphthenequinone (ng/g)	Nd
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Acenaphthenequinone (ng/g)	6.3
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Acenaphthenequinone (ng/g)	3
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Acenaphthenequinone (ng/g)	6.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Acenaphthenequinone (ng/g)	Nd
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Acenaphthenequinone (ng/g)	3.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Acenaphthenequinone (ng/g)	3.5
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Acenaphthenequinone (ng/g)	Nd
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Acenaphthenequinone (ng/g)	10.9
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Acenaphthenequinone (ng/g)	Nd
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	DiMethyl-Phenanthrene (ng/g)	80.1
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	DiMethyl-Phenanthrene (ng/g)	91.5
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	DiMethyl-Phenanthrene (ng/g)	31.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	112.2
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	149.1
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	34.2
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	43
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	14.1

The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	12.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	15.4
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	DiMethyl-Phenanthrene (ng/g)	1.9
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	DiMethyl-Phenanthrene (ng/g)	425.9
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	DiMethyl-Phenanthrene (ng/g)	41
The Dalian Bay	D1					Jul-99	surface	ENDosulfan I (10^{-9})	0.13
The Dalian Bay	D2					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D3					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D4					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D5					Jul-99	surface	ENDosulfan I (10^{-9})	0.04
The Dalian Bay	D6					Jul-99	surface	ENDosulfan I (10^{-9})	0.12
The Dalian Bay	D7					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D8					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D9					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	ENDosulfan I (10^{-9})	ND
The Dalian Bay	2					Jul-97	surface	ENDrin (10^{-9})	0.306
The Dalian Bay	17					Jul-97	surface	ENDrin (10^{-9})	0.394
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Fe (μg/g)	13134.3
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Fe (μg/g)	21801.2
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Fe (μg/g)	72148.7
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Fe (μg/g)	26141.7
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Fe (μg/g)	20224.1
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Fe (μg/g)	18748.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Fe (μg/g)	15293.8
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Fe (μg/g)	_
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Fe (μg/g)	22776.1
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Fe (μg/g)	16203.6

The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Fe (μg/g)	16987.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Fe (μg/g)	16075.7
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Fluorene (ng/g)	19
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Fluorene (ng/g)	22.9
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Fluorene (ng/g)	6.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Fluorene (ng/g)	21.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Fluorene (ng/g)	37.6
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Fluorene (ng/g)	12.2
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Fluorene (ng/g)	22.9
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Fluorene (ng/g)	4.5
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Fluorene (ng/g)	3.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Fluorene (ng/g)	Nd
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Fluorene (ng/g)	6.2
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Fluorene (ng/g)	73.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Fluorene (ng/g)	9.8
The Yellow Sea	Y1001					Aug-99	surface	Fluoranthene (ng/g)	93.4
The Yellow Sea	Y1004					Aug-99	surface	Fluoranthene (ng/g)	71.1
The Yellow Sea	Y1007					Aug-99	surface	Fluoranthene (ng/g)	62.8
The Yellow Sea	Ya003					Aug-99	surface	Fluoranthene (ng/g)	53.9
The Yellow Sea	Ya005					Aug-99	surface	Fluoranthene (ng/g)	93.5
The Yellow Sea	Yb003					Aug-99	surface	Fluoranthene (ng/g)	46.9
The Yellow Sea	Yb005					Aug-99	surface	Fluoranthene (ng/g)	30.5
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Fluoranthene (ng/g)	97.3
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Fluoranthene (ng/g)	111.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Fluoranthene (ng/g)	53
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Fluoranthene (ng/g)	201.8
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Fluoranthene (ng/g)	226.1

The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Fluoranthene (ng/g)	56.6
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Fluoranthene (ng/g)	158.9
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Fluoranthene (ng/g)	29.2
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Fluoranthene (ng/g)	26.3
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Fluoranthene (ng/g)	25.6
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Fluoranthene (ng/g)	7.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Fluoranthene (ng/g)	561.8
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Fluoranthene (ng/g)	61
The Yellow Sea	Y1001					Aug-99	surface	Flu/Py (ng/g)[8]	1.3
The Yellow Sea	Y1004					Aug-99	surface	Flu/Py (ng/g)[8]	2
The Yellow Sea	Y1007					Aug-99	surface	Flu/Py (ng/g)[8]	0.9
The Yellow Sea	Ya003					Aug-99	surface	Flu/Py (ng/g)[8]	3.2
The Yellow Sea	Ya005					Aug-99	surface	Flu/Py (ng/g)[8]	3
The Yellow Sea	Yb003					Aug-99	surface	Flu/Py (ng/g)[8]	3.1
The Yellow Sea	Yb005					Aug-99	surface	Flu/Py (ng/g)[8]	2.5
The Yellow Sea		36	0	124	0	May-98	0-1	Fluo / Fluo+Pyr[9]	0.7
The Yellow Sea		36	0	124	0	May-98	1-2	Fluo / Fluo+Pyr[9]	0.7
The Yellow Sea		36	0	124	0	May-98	2-4	Fluo / Fluo+Pyr[9]	0.6
The Yellow Sea		36	0	124	0	May-98	5-7	Fluo / Fluo+Pyr[9]	0.6
The Yellow Sea		36	0	124	0	May-98	11-13	Fluo / Fluo+Pyr[9]	0.7
The Yellow Sea		36	0	124	0	May-98	21-26	Fluo / Fluo+Pyr[9]	0.6
The Yellow Sea		36	0	124	0	May-98	31-37	Fluo / Fluo+Pyr[9]	0.7
The Yellow Sea		34	0	124	0	May-98	0-1	Fluo / Fluo+Pyr[9]	0.2
The Yellow Sea		34	0	124	0	May-98	2-3	Fluo / Fluo+Pyr[9]	0.5
The Yellow Sea		34	0	124	0	May-98	4-5	Fluo / Fluo+Pyr[9]	0.6
The Yellow Sea		34	0	124	0	May-98	8-9	Fluo / Fluo+Pyr[9]	0.7
The Yellow Sea		34	0	124	0	May-98	17-19	Fluo / Fluo+Pyr[9]	0.7

The Yellow Sea		34	0	124	0	May-98	27-30	Fluo / Fluo+Pyr[9]	0.6
The Yellow Sea		34	0	124	0	May-98	36-39	Fluo / Fluo+Pyr[9]	0.5
The Yellow Sea		34	0	124	0	May-98	45-47.5	Fluo / Fluo+Pyr[9]	0.5
The Dalian Bay	D1					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D2					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D3					Jul-99	surface	HCB (10^{-9})	0.11
The Dalian Bay	D4					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D5					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D6					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D7					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D8					Jul-99	surface	HCB (10^{-9})	0.37
The Dalian Bay	D9					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	HCB (10^{-9})	ND
The Dalian Bay	D1					Jul-99	surface	HCHs[2] (10^{-9})	6.51
The Dalian Bay	D2					Jul-99	surface	HCHs[2] (10^{-9})	3.21
The Dalian Bay	D3					Jul-99	surface	HCHs[2] (10^{-9})	1.22
The Dalian Bay	D4					Jul-99	surface	HCHs[2] (10^{-9})	1.85
The Dalian Bay	D5					Jul-99	surface	HCHs[2] (10^{-9})	1.79
The Dalian Bay	D6					Jul-99	surface	HCHs[2] (10^{-9})	7.96
The Dalian Bay	D7					Jul-99	surface	HCHs[2] (10^{-9})	2.4
The Dalian Bay	D8					Jul-99	surface	HCHs[2] (10^{-9})	3.01
The Dalian Bay	D9					Jul-99	surface	HCHs[2] (10^{-9})	1.11
The Dalian Bay	D10					Jul-99	surface	HCHs[2] (10^{-9})	2.54
The Dalian Bay	D1					Jul-99	surface	Heptachlor (10^{-9})	1.52
The Dalian Bay	D2					Jul-99	surface	Heptachlor (10^{-9})	0.37
The Dalian Bay	D3					Jul-99	surface	Heptachlor (10^{-9})	ND
The Dalian Bay	D4					Jul-99	surface	Heptachlor (10^{-9})	0.17

The Dalian Bay	D5					Jul-99	surface	Heptachlor (10^{-9})	ND
The Dalian Bay	D6					Jul-99	surface	Heptachlor (10^{-9})	1.12
The Dalian Bay	D7					Jul-99	surface	Heptachlor (10^{-9})	0.34
The Dalian Bay	D8					Jul-99	surface	Heptachlor (10^{-9})	0.36
The Dalian Bay	D9					Jul-99	surface	Heptachlor (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	Heptachlor (10^{-9})	0.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Hg (μg/g)	0.089
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Hg (μg/g)	0.086
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Hg (μg/g)	0.054
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Hg (μg/g)	0.089
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Hg (μg/g)	0.067
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Hg (μg/g)	0.059
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Hg (μg/g)	0.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Hg (μg/g)	0.069
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Hg (μg/g)	0.081
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Hg (μg/g)	0.11
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Hg (μg/g)	0.11
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Hg (μg/g)	0.1
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Hg (μg/g)	0.051
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Hg (μg/g)	0.053
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Hg (μg/g)	0.067
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Hg (μg/g)	0.063
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Hg (μg/g)	0.045
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Hg (μg/g)	0.18
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Hg (μg/g)	0.074
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Hg (μg/g)	0.068
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Hg (μg/g)	0.095

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Hg (μg/g)	0.075
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Hg (μg/g)	0.054
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Hg (μg/g)	0.041
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Hg (μg/g)	0.05
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Hg (μg/g)	0.066
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Hg (μg/g)	0.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Hg (μg/g)	0.98
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Hg (μg/g)	0.073
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Hg (μg/g)	0.099
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Hg (μg/g)	0.12
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Hg (μg/g)	0.076
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Hg (μg/g)	0.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Hg (μg/g)	0.15
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Hg (μg/g)	0.28
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Hg (μg/g)	0.12
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Hg (μg/g)	0.13
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Hg (μg/g)	0.095
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Hg (μg/g)	0.13
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Hg (μg/g)	0.19
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Hg (μg/g)	0.23
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Hg (μg/g)	0.22
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Hg (μg/g)	0.053
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Hg (μg/g)	0.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Hg (μg/g)	0.081
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Hg (μg/g)	0.026
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Hg (μg/g)	0.07
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Hg (μg/g)	0.09

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Hg (μg/g)	0.17
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Hg (μg/g)	0.05
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Hg (μg/g)	0.16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Hg (μg/g)	0.15
The Yellow Sea		36	0	124	0	May-98	0-1	IND / IND+B(ghi)P[10]	0.4
The Yellow Sea		36	0	124	0	May-98	1-2	IND / IND+B(ghi)P[10]	0.4
The Yellow Sea		36	0	124	0	May-98	2-4	IND / IND+B(ghi)P[10]	-
The Yellow Sea		36	0	124	0	May-98	5-7	IND / IND+B(ghi)P[10]	0.3
The Yellow Sea		36	0	124	0	May-98	11-13	IND / IND+B(ghi)P[10]	0.3
The Yellow Sea		36	0	124	0	May-98	21-26	IND / IND+B(ghi)P[10]	1
The Yellow Sea		36	0	124	0	May-98	31-37	IND / IND+B(ghi)P[10]	0.2
The Yellow Sea		34	0	124	0	May-98	0-1	IND / IND+B(ghi)P[10]	0.6
The Yellow Sea		34	0	124	0	May-98	2-3	IND / IND+B(ghi)P[10]	0.3
The Yellow Sea		34	0	124	0	May-98	4-5	IND / IND+B(ghi)P[10]	0.2
The Yellow Sea		34	0	124	0	May-98	8-9	IND / IND+B(ghi)P[10]	0.3
The Yellow Sea		34	0	124	0	May-98	17-19	IND / IND+B(ghi)P[10]	0.3
The Yellow Sea		34	0	124	0	May-98	27-30	IND / IND+B(ghi)P[10]	-
The Yellow Sea		34	0	124	0	May-98	36-39	IND / IND+B(ghi)P[10]	-
The Yellow Sea		34	0	124	0	May-98	45-47.5	IND / IND+B(ghi)P[10]	-
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	2.4
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	ND
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	7.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	16.9
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	65.4
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	11.7
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	45.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	7

The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	10
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	2.7
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	INDeno(1,2,3-cd)pyrene (ng/g)	ND
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	94.4
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	17.7
The Yellow Sea	Y1001					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	1.4
The Yellow Sea	Y1004					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	1.2
The Yellow Sea	Y1007					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	3
The Yellow Sea	Ya003					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	1.6
The Yellow Sea	Ya005					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	1.3
The Yellow Sea	Yb003					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	0.9
The Yellow Sea	Yb005					Aug-99	surface	INDeno(1,2,3-cd)pyrene (ng/g)	1.4
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Mg (µg/g)	966.1
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Mg (µg/g)	1047.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Mg (µg/g)	3276
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Mg (µg/g)	1661.1
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Mg (µg/g)	1321.4
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Mg (µg/g)	915
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Mg (µg/g)	831.7
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Mg (µg/g)	457.9
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Mg (µg/g)	1011.1
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Mg (µg/g)	1062.5
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Mg (µg/g)	885.9
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Mg (µg/g)	564.1
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Mn (µg/g)	620.3
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Mn (µg/g)	1135.5
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Mn (µg/g)	2555.2

The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Mn (µg/g)	608.2
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Mn (µg/g)	313.7
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Mn (µg/g)	525.4
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Mn (µg/g)	544
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Mn (µg/g)	120.4
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Mn (µg/g)	523.4
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Mn (µg/g)	346.3
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Mn (µg/g)	419.6
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Mn (µg/g)	447
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Methyl-phenanthrene (ng/g)	102.5
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Methyl-phenanthrene (ng/g)	80.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Methyl-phenanthrene (ng/g)	29.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Methyl-phenanthrene (ng/g)	123.1
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Methyl-phenanthrene (ng/g)	180.5
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Methyl-phenanthrene (ng/g)	41.8
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Methyl-phenanthrene (ng/g)	65.5
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Methyl-phenanthrene (ng/g)	19.7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Methyl-phenanthrene (ng/g)	16.3
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Methyl-phenanthrene (ng/g)	17.6
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Methyl-phenanthrene (ng/g)	5.8
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Methyl-phenanthrene (ng/g)	485.9
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Methyl-phenanthrene (ng/g)	49.2
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Naphthalene (ng/g)	59.3
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Naphthalene (ng/g)	93.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Naphthalene (ng/g)	26.6
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Naphthalene (ng/g)	59.7
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Naphthalene (ng/g)	96.3

The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Naphthalene (ng/g)	31.1
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Naphthalene (ng/g)	39.1
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Naphthalene (ng/g)	23
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Naphthalene (ng/g)	22.2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Naphthalene (ng/g)	6
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Naphthalene (ng/g)	26.5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Naphthalene (ng/g)	134
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Naphthalene (ng/g)	27.9
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Ni (μg/g)	49.4
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Ni (μg/g)	40.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Ni (μg/g)	172.1
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Ni (μg/g)	52.2
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Ni (μg/g)	36.8
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Ni (μg/g)	34
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Ni (μg/g)	38.9
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Ni (μg/g)	21.6
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Ni (μg/g)	92.8
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Ni (μg/g)	27.2
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Ni (μg/g)	34.2
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Ni (μg/g)	51.6
The Dalian Bay	D1					Jul-99	surface	OCPs[3] (10^{-9})	13.57
The Dalian Bay	D2					Jul-99	surface	OCPs[3](10^{-9})	5.22
The Dalian Bay	D3					Jul-99	surface	OCPs[3] (10^{-9})	3.38
The Dalian Bay	D4					Jul-99	surface	OCPs[3](10^{-9})	3.07
The Dalian Bay	D5					Jul-99	surface	OCPs[3] (10^{-9})	2.64
The Dalian Bay	D6					Jul-99	surface	OCPs[3](10^{-9})	15.92
The Dalian Bay	D7					Jul-99	surface	OCPs[3] (10^{-9})	4.53

The Dalian Bay	D8					Jul-99	surface	OCPs[3](10^{-9})	5.93
The Dalian Bay	D9					Jul-99	surface	OCPs[3] (10^{-9})	2.54
The Dalian Bay	D10					Jul-99	surface	OCPs[3](10^{-9})	4.94
The Yellow Sea	Y1001					Aug-99	surface	P/A[11] (ng/g)	9.4
The Yellow Sea	Y1004					Aug-99	surface	P/A[11] (ng/g)	5
The Yellow Sea	Y1007					Aug-99	surface	P/A[11] (ng/g)	15.3
The Yellow Sea	Ya003					Aug-99	surface	P/A[11] (ng/g)	2.4
The Yellow Sea	Ya005					Aug-99	surface	P/A[11] (ng/g)	12.6
The Yellow Sea	Yb003					Aug-99	surface	P/A[11] (ng/g)	11.1
The Yellow Sea	Yb005					Aug-99	surface	P/A[11] (ng/g)	9.3
The Yellow Sea		36	0	124	0	May-98	0-1	PAHs[12] (ng/g)	1500
The Yellow Sea		36	0	124	0	May-98	1-2	PAHs[12] (ng/g)	800
The Yellow Sea		36	0	124	0	May-98	2-4	PAHs[12] (ng/g)	2500
The Yellow Sea		36	0	124	0	May-98	5-7	PAHs[12] (ng/g)	3400
The Yellow Sea		36	0	124	0	May-98	11-13	PAHs[12] (ng/g)	920
The Yellow Sea		36	0	124	0	May-98	21-26	PAHs[12] (ng/g)	1400
The Yellow Sea		36	0	124	0	May-98	31-37	PAHs[12] (ng/g)	1900
The Yellow Sea		34	0	124	0	May-98	0-1	PAHs[12] (ng/g)	3600
The Yellow Sea		34	0	124	0	May-98	2-3	PAHs[12] (ng/g)	900
The Yellow Sea		34	0	124	0	May-98	4-5	PAHs[12] (ng/g)	480
The Yellow Sea		34	0	124	0	May-98	8-9	PAHs[12] (ng/g)	1500
The Yellow Sea		34	0	124	0	May-98	17-19	PAHs[12] (ng/g)	540
The Yellow Sea		34	0	124	0	May-98	27-30	PAHs[12] (ng/g)	530
The Yellow Sea		34	0	124	0	May-98	36-39	PAHs[12] (ng/g)	1900
The Yellow Sea		34	0	124	0	May-98	45-47.5	PAHs[12] (ng/g)	3800
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Pb (μg/g)	89.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Pb (μg/g)	27.2

The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Pb (µg/g)	46.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Pb (µg/g)	27.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Pb (µg/g)	50
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Pb (µg/g)	62.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Pb (µg/g)	42.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Pb (µg/g)	28.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Pb (µg/g)	35.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Pb (µg/g)	21.7
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Pb (µg/g)	15.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Pb (µg/g)	21.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Pb (µg/g)	28.1
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Pb (µg/g)	24.3
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Pb (µg/g)	30.1
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Pb (µg/g)	29.3
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Pb (µg/g)	45.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Pb (µg/g)	35
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Pb (µg/g)	24.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Pb (µg/g)	32.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Pb (µg/g)	20.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Pb (µg/g)	27.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Pb (µg/g)	26.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Pb (µg/g)	31.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Pb (µg/g)	26.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Pb (µg/g)	49.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Pb (µg/g)	14.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Pb (µg/g)	16.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Pb (µg/g)	22

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Pb (μg/g)	35.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Pb (μg/g)	37
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Pb (μg/g)	45.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Pb (μg/g)	43.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Pb (μg/g)	31
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Pb (μg/g)	31.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Pb (μg/g)	19.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Pb (μg/g)	39.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Pb (μg/g)	23.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Pb (μg/g)	15.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Pb (μg/g)	19.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Pb (μg/g)	13.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Pb (μg/g)	16
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Pb (μg/g)	13.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Pb (μg/g)	14.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Pb (μg/g)	11.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Pb (μg/g)	11.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Pb (μg/g)	12
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Pb (μg/g)	10.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Pb (μg/g)	12.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Pb (μg/g)	31.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Pb (μg/g)	26.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Pb (μg/g)	33.1
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Pb (μg/g)	0.764
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Pb (μg/g)	1.081
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Pb (μg/g)	7.12
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Pb (μg/g)	2.15

The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Pb (μg/g)	3.69
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Pb (μg/g)	1.3
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Pb (μg/g)	0.609
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Pb (μg/g)	0.906
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Pb (μg/g)	1.39
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Pb (μg/g)	0.3
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Pb (μg/g)	0.67
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Pb (μg/g)	2.68
The Dalian Bay	2					Jul-97	surface	PCB-101 (10^{-9})	0.272
The Dalian Bay	3					Jul-97	surface	PCB-101 (10^{-9})	0.553
The Dalian Bay	7					Jul-97	surface	PCB-101 (10^{-9})	0.226
The Dalian Bay	9					Jul-97	surface	PCB-101 (10^{-9})	0.666
The Dalian Bay	12					Jul-97	surface	PCB-101 (10^{-9})	0.308
The Dalian Bay	17					Jul-97	surface	PCB-101 (10^{-9})	1.860
The Dalian Bay	18					Jul-97	surface	PCB-101 (10^{-9})	0.318
The Dalian Bay	20					Jul-97	surface	PCB-101 (10^{-9})	0.393
The Dalian Bay	2					Jul-97	surface	PCB-112 (10^{-9})	0.498
The Dalian Bay	7					Jul-97	surface	PCB-112 (10^{-9})	0.041
The Dalian Bay	9					Jul-97	surface	PCB-112 (10^{-9})	0.167
The Dalian Bay	17					Jul-97	surface	PCB-112 (10^{-9})	0.399
The Dalian Bay	18					Jul-97	surface	PCB-112 (10^{-9})	0.078
The Dalian Bay	3					Jul-97	surface	PCB-118 (10^{-9})	0.727
The Dalian Bay	7					Jul-97	surface	PCB-118 (10^{-9})	0.204
The Dalian Bay	9					Jul-97	surface	PCB-118 (10^{-9})	0.239
The Dalian Bay	12					Jul-97	surface	PCB-118 (10^{-9})	0.101
The Dalian Bay	17					Jul-97	surface	PCB-118 (10^{-9})	1.199
The Dalian Bay	18					Jul-97	surface	PCB-118 (10^{-9})	0.301

The Dalian Bay	2					Jul-97	surface	PCB-138 (10^{-9})	0.724
The Dalian Bay	3					Jul-97	surface	PCB-138 (10^{-9})	0.315
The Dalian Bay	7					Jul-97	surface	PCB-138 (10^{-9})	0.211
The Dalian Bay	9					Jul-97	surface	PCB-138 (10^{-9})	0.217
The Dalian Bay	12					Jul-97	surface	PCB-138 (10^{-9})	0.137
The Dalian Bay	17					Jul-97	surface	PCB-138 (10^{-9})	2.306
The Dalian Bay	18					Jul-97	surface	PCB-138 (10^{-9})	0.149
The Dalian Bay	20					Jul-97	surface	PCB-138 (10^{-9})	0.059
The Dalian Bay	2					Jul-97	surface	PCB-153 (10^{-9})	0.700
The Dalian Bay	3					Jul-97	surface	PCB-153 (10^{-9})	0.088
The Dalian Bay	7					Jul-97	surface	PCB-153 (10^{-9})	0.063
The Dalian Bay	9					Jul-97	surface	PCB-153 (10^{-9})	0.295
The Dalian Bay	10					Jul-97	surface	PCB-153 (10^{-9})	0.103
The Dalian Bay	18					Jul-97	surface	PCB-153 (10^{-9})	0.631
The Dalian Bay	2					Jul-97	surface	PCB-155 (10^{-9})	3.230
The Dalian Bay	3					Jul-97	surface	PCB-155 (10^{-9})	0.609
The Dalian Bay	10					Jul-97	surface	PCB-155 (10^{-9})	0.511
The Dalian Bay	3					Jul-97	surface	PCB-180 (10^{-9})	0.129
The Dalian Bay	2					Jul-97	surface	PCB-198 (10^{-9})	0.342
The Dalian Bay	3					Jul-97	surface	PCB-198 (10^{-9})	0.107
The Dalian Bay	9					Jul-97	surface	PCB-198 (10^{-9})	0.050
The Dalian Bay	10					Jul-97	surface	PCB-198 (10^{-9})	0.042
The Dalian Bay	18					Jul-97	surface	PCB-198 (10^{-9})	0.040
The Dalian Bay	2					Jul-97	surface	PCB-28 (10^{-9})	0.920
The Dalian Bay	7					Jul-97	surface	PCB-28 (10^{-9})	0.161
The Dalian Bay	9					Jul-97	surface	PCB-28 (10^{-9})	0.518
The Dalian Bay	10					Jul-97	surface	PCB-28 (10^{-9})	0.202

The Dalian Bay	2					Jul-97	surface	PCBs[13] (10^{-9})	6.686
The Dalian Bay	3					Jul-97	surface	PCBs[13] (10^{-9})	2.528
The Dalian Bay	7					Jul-97	surface	PCBs[13] (10^{-9})	0.906
The Dalian Bay	9					Jul-97	surface	PCBs[13] (10^{-9})	2.152
The Dalian Bay	10					Jul-97	surface	PCBs[13] (10^{-9})	0.858
The Dalian Bay	12					Jul-97	surface	PCBs[13] (10^{-9})	0.546
The Dalian Bay	17					Jul-97	surface	PCBs[13] (10^{-9})	5.764
The Dalian Bay	18					Jul-97	surface	PCBs[13] (10^{-9})	1.517
The Dalian Bay	20					Jul-97	surface	PCBs[13] (10^{-9})	0.452
The Yellow Sea	Y1001					Aug-99	surface	Perylene (ng/g)	34.3
The Yellow Sea	Y1004					Aug-99	surface	Perylene (ng/g)	28
The Yellow Sea	Y1007					Aug-99	surface	Perylene (ng/g)	72.4
The Yellow Sea	Ya003					Aug-99	surface	Perylene (ng/g)	44.1
The Yellow Sea	Ya005					Aug-99	surface	Perylene (ng/g)	125.5
The Yellow Sea	Yb003					Aug-99	surface	Perylene (ng/g)	21.6
The Yellow Sea	Yb005					Aug-99	surface	Perylene (ng/g)	34.1
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Perylene (ng/g)	4.9
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Perylene (ng/g)	7.1
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Perylene (ng/g)	7.2
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Perylene (ng/g)	13.5
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Perylene (ng/g)	29.1
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Perylene (ng/g)	7
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Perylene (ng/g)	20.2
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Perylene (ng/g)	7
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Perylene (ng/g)	5
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Perylene (ng/g)	2.7
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Perylene (ng/g)	4.8

The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Perylene (ng/g)	60.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Perylene (ng/g)	2.5
The Yellow Sea	Y1001					Aug-99	surface	Phenanthrene (ng/g)	55.7
The Yellow Sea	Y1004					Aug-99	surface	Phenanthrene (ng/g)	47.5
The Yellow Sea	Y1007					Aug-99	surface	Phenanthrene (ng/g)	185.2
The Yellow Sea	Ya003					Aug-99	surface	Phenanthrene (ng/g)	27.4
The Yellow Sea	Ya005					Aug-99	surface	Phenanthrene (ng/g)	53
The Yellow Sea	Yb003					Aug-99	surface	Phenanthrene (ng/g)	28.9
The Yellow Sea	Yb005					Aug-99	surface	Phenanthrene (ng/g)	17.9
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Phenanthrene (ng/g)	55.9
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Phenanthrene (ng/g)	68.7
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Phenanthrene (ng/g)	27.3
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Phenanthrene (ng/g)	106.7
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Phenanthrene (ng/g)	192.3
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Phenanthrene (ng/g)	58.9
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Phenanthrene (ng/g)	100.3
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Phenanthrene (ng/g)	25.4
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Phenanthrene (ng/g)	16.3
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Phenanthrene (ng/g)	11
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Phenanthrene (ng/g)	11.6
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Phenanthrene (ng/g)	387.7
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Phenanthrene (ng/g)	45.1
The Dalian Bay	2					Jul-97	surface	p.p'-DDD (10^{-9})	1.943
The Dalian Bay	3					Jul-97	surface	p.p'-DDD (10^{-9})	0.734
The Dalian Bay	7					Jul-97	surface	p.p'-DDD (10^{-9})	0.324
The Dalian Bay	9					Jul-97	surface	p.p'-DDD (10^{-9})	0.626
The Dalian Bay	10					Jul-97	surface	p.p'-DDD (10^{-9})	0.614

The Dalian Bay	12					Jul-97	surface	p.p'-DDD (10^{-9})	0.554
The Dalian Bay	14					Jul-97	surface	p.p'-DDD (10^{-9})	0.868
The Dalian Bay	17					Jul-97	surface	p.p'-DDD (10^{-9})	2.239
The Dalian Bay	18					Jul-97	surface	p.p'-DDD (10^{-9})	0.419
The Dalian Bay	20					Jul-97	surface	p.p'-DDD (10^{-9})	0.910
The Dalian Bay	D1					Jul-99	surface	p.p'-DDD (10^{-9})	1.94
The Dalian Bay	D2					Jul-99	surface	p.p'-DDD (10^{-9})	0.73
The Dalian Bay	D3					Jul-99	surface	p.p'-DDD (10^{-9})	0.61
The Dalian Bay	D4					Jul-99	surface	p.p'-DDD (10^{-9})	0.42
The Dalian Bay	D5					Jul-99	surface	p.p'-DDD (10^{-9})	0.32
The Dalian Bay	D6					Jul-99	surface	p.p'-DDD (10^{-9})	2.24
The Dalian Bay	D7					Jul-99	surface	p.p'-DDD (10^{-9})	0.55
The Dalian Bay	D8					Jul-99	surface	p.p'-DDD (10^{-9})	0.63
The Dalian Bay	D9					Jul-99	surface	p.p'-DDD (10^{-9})	0.87
The Dalian Bay	D10					Jul-99	surface	p.p'-DDD (10^{-9})	0.91
The Dalian Bay	2					Jul-97	surface	p.p'-DDE (10^{-9})	1.109
The Dalian Bay	3					Jul-97	surface	p.p'-DDE (10^{-9})	0.483
The Dalian Bay	7					Jul-97	surface	p.p'-DDE (10^{-9})	0.287
The Dalian Bay	9					Jul-97	surface	p.p'-DDE (10^{-9})	0.785
The Dalian Bay	10					Jul-97	surface	p.p'-DDE (10^{-9})	0.288
The Dalian Bay	12					Jul-97	surface	p.p'-DDE (10^{-9})	0.423
The Dalian Bay	14					Jul-97	surface	p.p'-DDE (10^{-9})	0.189
The Dalian Bay	17					Jul-97	surface	p.p'-DDE (10^{-9})	0.252
The Dalian Bay	18					Jul-97	surface	p.p'-DDE (10^{-9})	0.483
The Dalian Bay	20					Jul-97	surface	p.p'-DDE (10^{-9})	0.501
The Dalian Bay	D1					Jul-99	surface	p.p'-DDE (10^{-9})	1.11
The Dalian Bay	D2					Jul-99	surface	p.p'-DDE (10^{-9})	0.48

The Dalian Bay	D3					Jul-99	surface	p.p'-DDE (10^{-9})	0.29
The Dalian Bay	D4					Jul-99	surface	p.p'-DDE (10^{-9})	0.48
The Dalian Bay	D5					Jul-99	surface	p.p'-DDE (10^{-9})	0.29
The Dalian Bay	D6					Jul-99	surface	p.p'-DDE (10^{-9})	1.25
The Dalian Bay	D7					Jul-99	surface	p.p'-DDE (10^{-9})	0.42
The Dalian Bay	D8					Jul-99	surface	p.p'-DDE (10^{-9})	0.79
The Dalian Bay	D9					Jul-99	surface	p.p'-DDE (10^{-9})	0.19
The Dalian Bay	D10					Jul-99	surface	p.p'-DDE (10^{-9})	0.5
The Dalian Bay	2					Jul-97	surface	p.p'-DDT (10^{-9})	1.043
The Dalian Bay	3					Jul-97	surface	p.p'-DDT (10^{-9})	0.260
The Dalian Bay	7					Jul-97	surface	p.p'-DDT (10^{-9})	0.116
The Dalian Bay	9					Jul-97	surface	p.p'-DDT (10^{-9})	0.250
The Dalian Bay	10					Jul-97	surface	p.p'-DDT (10^{-9})	1.014
The Dalian Bay	12					Jul-97	surface	p.p'-DDT (10^{-9})	0.817
The Dalian Bay	14					Jul-97	surface	p.p'-DDT (10^{-9})	0.374
The Dalian Bay	17					Jul-97	surface	p.p'-DDT (10^{-9})	3.232
The Dalian Bay	18					Jul-97	surface	p.p'-DDT (10^{-9})	0.154
The Dalian Bay	20					Jul-97	surface	p.p'-DDT (10^{-9})	0.793
The Dalian Bay	D1					Jul-99	surface	p.p'-DDT (10^{-9})	1.04
The Dalian Bay	D2					Jul-99	surface	p.p'-DDT (10^{-9})	0.26
The Dalian Bay	D3					Jul-99	surface	p.p'-DDT (10^{-9})	1.01
The Dalian Bay	D4					Jul-99	surface	p.p'-DDT (10^{-9})	0.15
The Dalian Bay	D5					Jul-99	surface	p.p'-DDT (10^{-9})	0.12
The Dalian Bay	D6					Jul-99	surface	p.p'-DDT (10^{-9})	3.23
The Dalian Bay	D7					Jul-99	surface	p.p'-DDT (10^{-9})	0.82
The Dalian Bay	D8					Jul-99	surface	p.p'-DDT (10^{-9})	0.25
The Dalian Bay	D9					Jul-99	surface	p.p'-DDT (10^{-9})	0.37

The Dalian Bay	D10					Jul-99	surface	p.p'-DDT (10^{-9})	0.79
The Yellow Sea	Y1001					Aug-99	surface	Pyrene (ng/g)	71.9
The Yellow Sea	Y1004					Aug-99	surface	Pyrene (ng/g)	35.6
The Yellow Sea	Y1007					Aug-99	surface	Pyrene (ng/g)	72.8
The Yellow Sea	Ya003					Aug-99	surface	Pyrene (ng/g)	16.8
The Yellow Sea	Ya005					Aug-99	surface	Pyrene (ng/g)	31.2
The Yellow Sea	Yb003					Aug-99	surface	Pyrene (ng/g)	15.1
The Yellow Sea	Yb005					Aug-99	surface	Pyrene (ng/g)	12.2
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Pyrene (ng/g)	87
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Pyrene (ng/g)	103.7
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Pyrene (ng/g)	47.9
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Pyrene (ng/g)	216
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Pyrene (ng/g)	281.9
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Pyrene (ng/g)	46.8
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Pyrene (ng/g)	127.1
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Pyrene (ng/g)	21.9
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Pyrene (ng/g)	23.7
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Pyrene (ng/g)	17.1
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Pyrene (ng/g)	5
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Pyrene (ng/g)	480.6
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Pyrene (ng/g)	50.4
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Rhamnetin (ng/g)	3.7
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Rhamnetin (ng/g)	2.9
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Rhamnetin (ng/g)	3.9
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Rhamnetin (ng/g)	5.5
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Rhamnetin (ng/g)	7.8
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Rhamnetin (ng/g)	3.8

The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Rhamnetin (ng/g)	4.1
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Rhamnetin (ng/g)	ND
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Rhamnetin (ng/g)	2
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Rhamnetin (ng/g)	2.2
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Rhamnetin (ng/g)	ND
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Rhamnetin (ng/g)	19.1
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Rhamnetin (ng/g)	2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Sb (μg/g)	0.97
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Sb (μg/g)	1.03
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Sb (μg/g)	0.99
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Sb (μg/g)	1.07
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Sb (μg/g)	0.97
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Sb (μg/g)	1.1
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Sb (μg/g)	1.07
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Sb (μg/g)	0.89
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Sb (μg/g)	0.72
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Sb (μg/g)	0.72
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Sb (μg/g)	0.7
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Sb (μg/g)	0.67
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Sb (μg/g)	0.72
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Sb (μg/g)	0.99
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Sb (μg/g)	0.7
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Sb (μg/g)	0.75
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Sb (μg/g)	0.79
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Sb (μg/g)	0.92
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Sb (μg/g)	0.76
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Sb (μg/g)	0.63

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Sb (μg/g)	0.71
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Sb (μg/g)	0.71
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Sb (μg/g)	0.85
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Sb (μg/g)	0.61
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Sb (μg/g)	0.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Sb (μg/g)	0.84
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Sb (μg/g)	0.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Sb (μg/g)	0.85
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Sb (μg/g)	0.78
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Sb (μg/g)	0.88
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Sb (μg/g)	0.84
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Sb (μg/g)	0.88
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Sb (μg/g)	0.83
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Sb (μg/g)	0.62
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Sb (μg/g)	0.59
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Sb (μg/g)	0.62
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Sb (μg/g)	0.59
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Sb (μg/g)	0.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Sb (μg/g)	0.82
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Sb (μg/g)	0.73
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Sb (μg/g)	0.74
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Sb (μg/g)	0.69

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Sb (μg/g)	0.52
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Sb (μg/g)	0.54
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Sb (μg/g)	0.67
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Sb (μg/g)	0.66
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Sb (μg/g)	0.65
The Yellow Sea		123	0	37	0.4	May-98	?	Si accmulation rate (mol/m^2/yr)	0.24
The Yellow Sea		121	0.1	35	59.9	May-98	?	Si accmulation rate (mol/m^2/yr)	0.58
The Yellow Sea		122	0.4	35	59.7	May-98	?	Si accmulation rate (mol/m^2/yr)	0.36
The Yellow Sea		121	59.9	35	0	May-98	?	Si accmulation rate (mol/m^2/yr)	0.16
The Yellow Sea		123	59.9	35	0.2	May-98	?	Si accmulation rate (mol/m^2/yr)	0.1
The Yellow Sea		122	14.4	32	42.6	May-98	?	Si accmulation rate (mol/m^2/yr)	0.06
The Yellow Sea		123	45.1	33	4	May-98	?	Si accmulation rate (mol/m^2/yr)	0.24
The Yellow Sea		125	0	33	19.7	May-98	?	Si accmulation rate (mol/m^2/yr)	0.14
The Yellow Sea		123	59.2	32	16.5	May-98	?	Si accmulation rate (mol/m^2/yr)	0.43
The Yellow Sea		125	45	33	3	May-98	?	Si accmulation rate (mol/m^2/yr)	0.08
The Yellow Sea		123	20	32	19.2	May-98	?	Si accmulation rate (mol/m^2/yr)	0.5
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	TriMethyl-phenanthrene (ng/g)	39.1
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	TriMethyl-phenanthrene (ng/g)	48.6
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	TriMethyl-phenanthrene (ng/g)	17.5
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	71.1

The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	80.5
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	11.4
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	16.4
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	5.6
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	8.1
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	8.8
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	TriMethyl-phenanthrene (ng/g)	ND
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	TriMethyl-phenanthrene (ng/g)	240.2
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	TriMethyl-phenanthrene (ng/g)	22.5
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	0-15	Zn (µg/g)	48.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	15-30	Zn (µg/g)	36.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	30-40	Zn (µg/g)	92
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	40-50	Zn (µg/g)	59.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	50-55	Zn (µg/g)	55.2
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	55-60	Zn (µg/g)	64.8
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	60-70	Zn (µg/g)	66
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	70-80	Zn (µg/g)	64.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	80-90	Zn (µg/g)	60.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	90-100	Zn (µg/g)	47.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	100-110	Zn (µg/g)	48
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	110-120	Zn (µg/g)	34.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	120-130	Zn (µg/g)	26.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	130-140	Zn (µg/g)	26
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	140-150	Zn (µg/g)	41.6
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	150-160	Zn (µg/g)	42.4
The Jiaozhou Bay		36	9.344	120	21.157	Feb-01	160-175	Zn (µg/g)	48
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	0-20	Zn (µg/g)	36.8

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	20-40	Zn (μg/g)	32
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	40-60	Zn (μg/g)	26.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	60-80	Zn (μg/g)	26.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	80-100	Zn (μg/g)	33.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	100-110	Zn (μg/g)	30.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	110-120	Zn (μg/g)	34.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	120-130	Zn (μg/g)	40.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	130-135	Zn (μg/g)	64.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	135-140	Zn (μg/g)	29.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	140-145	Zn (μg/g)	27.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	145-150	Zn (μg/g)	57.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	150-155	Zn (μg/g)	55.2
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	155-160	Zn (μg/g)	56.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	160-165	Zn (μg/g)	62.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	165-170	Zn (μg/g)	59.8
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	170-175	Zn (μg/g)	59.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	175-180	Zn (μg/g)	54.5
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	180-185	Zn (μg/g)	55.7
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	185-190	Zn (μg/g)	62.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	190-195	Zn (μg/g)	66.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	195-200	Zn (μg/g)	43
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	200-205	Zn (μg/g)	42.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	205-210	Zn (μg/g)	52.3
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	210-215	Zn (μg/g)	49.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	215-220	Zn (μg/g)	28.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	220-225	Zn (μg/g)	34.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	225-230	Zn (μg/g)	36.9

The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	230-235	Zn (μg/g)	45.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	235-240	Zn (μg/g)	46.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	240-245	Zn (μg/g)	45.9
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	245-250	Zn (μg/g)	39.1
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	250-255	Zn (μg/g)	62.4
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	255-260	Zn (μg/g)	47.6
The Jiaozhou Bay		36	9.35	120	21.116	Feb-01	260-275	Zn (μg/g)	53.9
The Jiaozhou Bay		120	19.28	36	15.23	Jun-99	surface	Zn (μg/g)	186.79
The Jiaozhou Bay		120	18.84	36	15.27	Jun-99	surface	Zn (μg/g)	62.64
The Jiaozhou Bay		120	13.16	36	12.86	Jul-99	surface	Zn (μg/g)	201.66
The Jiaozhou Bay		120	20.551	36	11.341	Jul-97	surface	Zn (μg/g)	93.19
The Jiaozhou Bay		120	19.049	36	7.416	Jul-97	surface	Zn (μg/g)	81.56
The Jiaozhou Bay		120	18.499	36	9.126	Jul-97	surface	Zn (μg/g)	145.47
The Jiaozhou Bay		120	15.484	36	5.214	Jul-97	surface	Zn (μg/g)	34.87
The Jiaozhou Bay		120	13.848	36	2.148	Jul-97	surface	Zn (μg/g)	12.6
The Jiaozhou Bay		120	13.531	36	5.317	Jul-97	surface	Zn (μg/g)	181.49
The Jiaozhou Bay		120	11.975	36	9.035	Jul-97	surface	Zn (μg/g)	101.17
The Jiaozhou Bay		120	17.285	36	1.299	Jul-97	surface	Zn (μg/g)	35.48
The Jiaozhou Bay		120	19.22	36	15.23	Nov-99	surface	Zn (μg/g)	157.87
The Dalian Bay	1					Jul-99	surface	α-BHC (10^{-9})	0.79
The Dalian Bay	2					Jul-99	surface	α-BHC (10^{-9})	0.18
The Dalian Bay	3					Jul-99	surface	α-BHC (10^{-9})	0.04
The Dalian Bay	4					Jul-99	surface	α-BHC (10^{-9})	0.10
The Dalian Bay	5					Jul-99	surface	α-BHC (10^{-9})	0.10
The Dalian Bay	6					Jul-99	surface	α-BHC (10^{-9})	0.82
The Dalian Bay	7					Jul-99	surface	α-BHC (10^{-9})	0.12
The Dalian Bay	8					Jul-99	surface	α-BHC (10^{-9})	0.21

The Dalian Bay	9					Jul-99	surface	α-BHC (10^{-9})	0.03
The Dalian Bay	10					Jul-99	surface	α-BHC (10^{-9})	0.09
The Dalian Bay	2					Jul-97	surface	α-BHC (10^{-9})	0.794
The Dalian Bay	20					Jul-97	surface	α-BHC (10^{-9})	0.091
The Dalian Bay	3					Jul-97	surface	α-BHC (10^{-9})	0.177
The Dalian Bay	7					Jul-97	surface	α-BHC (10^{-9})	0.091
The Dalian Bay	9					Jul-97	surface	α-BHC (10^{-9})	0.205
The Dalian Bay	10					Jul-97	surface	α-BHC (10^{-9})	0.040
The Dalian Bay	12					Jul-97	surface	α-BHC (10^{-9})	0.212
The Dalian Bay	14					Jul-97	surface	α-BHC (10^{-9})	0.027
The Dalian Bay	17					Jul-97	surface	α-BHC (10^{-9})	0.821
The Dalian Bay	D1					Jul-99	surface	α-HCH (10^{-9})	0.79
The Dalian Bay	D2					Jul-99	surface	α-HCH (10^{-9})	0.18
The Dalian Bay	D3					Jul-99	surface	α-HCH (10^{-9})	0.04
The Dalian Bay	D4					Jul-99	surface	α-HCH (10^{-9})	0.1
The Dalian Bay	D5					Jul-99	surface	α-HCH (10^{-9})	0.1
The Dalian Bay	D6					Jul-99	surface	α-HCH (10^{-9})	0.82
The Dalian Bay	D7					Jul-99	surface	α-HCH (10^{-9})	0.12
The Dalian Bay	D8					Jul-99	surface	α-HCH (10^{-9})	0.21
The Dalian Bay	D9					Jul-99	surface	α-HCH (10^{-9})	0.03
The Dalian Bay	D10					Jul-99	surface	α-HCH (10^{-9})	0.09
The Dalian Bay	1					Jul-99	surface	β-BHC (10^{-9})	4.52
The Dalian Bay	2					Jul-99	surface	β-BHC (10^{-9})	1.89
The Dalian Bay	3					Jul-99	surface	β-BHC (10^{-9})	1.11
The Dalian Bay	4					Jul-99	surface	β-BHC (10^{-9})	1.59
The Dalian Bay	5					Jul-99	surface	β-BHC (10^{-9})	1.52
The Dalian Bay	6					Jul-99	surface	β-BHC (10^{-9})	5.78

The Dalian Bay	7					Jul-99	surface	β-BHC (10^{-9})	2.03
The Dalian Bay	8					Jul-99	surface	β-BHC (10^{-9})	2.56
The Dalian Bay	9					Jul-99	surface	β-BHC (10^{-9})	1.08
The Dalian Bay	10					Jul-99	surface	β-BHC (10^{-9})	2.14
The Dalian Bay	2					Jul-97	surface	β-BHC (10^{-9})	4.520
The Dalian Bay	3					Jul-97	surface	β-BHC (10^{-9})	1.894
The Dalian Bay	7					Jul-97	surface	β-BHC (10^{-9})	1.523
The Dalian Bay	9					Jul-97	surface	β-BHC (10^{-9})	2.563
The Dalian Bay	10					Jul-97	surface	β-BHC (10^{-9})	1.108
The Dalian Bay	12					Jul-97	surface	β-BHC (10^{-9})	2.082
The Dalian Bay	14					Jul-97	surface	β-BHC (10^{-9})	1.082
The Dalian Bay	17					Jul-97	surface	β-BHC (10^{-9})	5.782
The Dalian Bay	18					Jul-97	surface	β-BHC (10^{-9})	1.586
The Dalian Bay	20					Jul-97	surface	β-BHC (10^{-9})	2.138
The Dalian Bay	D1					Jul-99	surface	β-HCH (10^{-9})	4.52
The Dalian Bay	D2					Jul-99	surface	β-HCH (10^{-9})	1.89
The Dalian Bay	D3					Jul-99	surface	β-HCH (10^{-9})	1.11
The Dalian Bay	D4					Jul-99	surface	β-HCH (10^{-9})	1.59
The Dalian Bay	D5					Jul-99	surface	β-HCH (10^{-9})	1.52
The Dalian Bay	D6					Jul-99	surface	β-HCH (10^{-9})	5.78
The Dalian Bay	D7					Jul-99	surface	β-HCH (10^{-9})	2.03
The Dalian Bay	D8					Jul-99	surface	β-HCH (10^{-9})	2.56
The Dalian Bay	D9					Jul-99	surface	β-HCH (10^{-9})	1.08
The Dalian Bay	D10					Jul-99	surface	β-HCH (10^{-9})	2.14
The Dalian Bay	1					Jul-99	surface	γ-BHC (10^{-9})	1.05
The Dalian Bay	2					Jul-99	surface	γ-BHC (10^{-9})	1.11
The Dalian Bay	3					Jul-99	surface	γ-BHC (10^{-9})	0.07

The Dalian Bay	4					Jul-99	surface	γ-BHC (10^{-9})	0.09
The Dalian Bay	5					Jul-99	surface	γ-BHC (10^{-9})	0.13
The Dalian Bay	6					Jul-99	surface	γ-BHC (10^{-9})	1.28
The Dalian Bay	7					Jul-99	surface	γ-BHC (10^{-9})	0.21
The Dalian Bay	8					Jul-99	surface	γ-BHC (10^{-9})	0.17
The Dalian Bay	9					Jul-99	surface	γ-BHC (10^{-9})	ND
The Dalian Bay	10					Jul-99	surface	γ-BHC (10^{-9})	0.09
The Dalian Bay	2					Jul-97	surface	γ-BHC (10^{-9})	1.049
The Dalian Bay	3					Jul-97	surface	γ-BHC (10^{-9})	1.108
The Dalian Bay	7					Jul-97	surface	γ-BHC (10^{-9})	0.134
The Dalian Bay	9					Jul-97	surface	γ-BHC (10^{-9})	0.168
The Dalian Bay	10					Jul-97	surface	γ-BHC (10^{-9})	0.067
The Dalian Bay	12					Jul-97	surface	γ-BHC (10^{-9})	0.208
The Dalian Bay	17					Jul-97	surface	γ-BHC (10^{-9})	1.278
The Dalian Bay	18					Jul-97	surface	γ-BHC (10^{-9})	0.086
The Dalian Bay	20					Jul-97	surface	γ-BHC (10^{-9})	0.224
The Dalian Bay	D1					Jul-99	surface	γ-HCH (10^{-9})	1.05
The Dalian Bay	D2					Jul-99	surface	γ-HCH (10^{-9})	1.11
The Dalian Bay	D3					Jul-99	surface	γ-HCH (10^{-9})	0.07
The Dalian Bay	D4					Jul-99	surface	γ-HCH (10^{-9})	0.09
The Dalian Bay	D5					Jul-99	surface	γ-HCH (10^{-9})	0.13
The Dalian Bay	D6					Jul-99	surface	γ-HCH (10^{-9})	1.28
The Dalian Bay	D7					Jul-99	surface	γ-HCH (10^{-9})	0.21
The Dalian Bay	D8					Jul-99	surface	γ-HCH (10^{-9})	0.17
The Dalian Bay	D9					Jul-99	surface	γ-HCH (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	γ-HCH (10^{-9})	0.22
The Dalian Bay	1					Jul-99	surface	δ-BHC (10^{-9})	0.15

The Dalian Bay	2					Jul-99	surface	δ-BHC (10^{-9})	0.03
The Dalian Bay	3					Jul-99	surface	δ-BHC (10^{-9})	ND
The Dalian Bay	4					Jul-99	surface	δ-BHC (10^{-9})	0.07
The Dalian Bay	5					Jul-99	surface	δ-BHC (10^{-9})	0.04
The Dalian Bay	6					Jul-99	surface	δ-BHC (10^{-9})	0.08
The Dalian Bay	7					Jul-99	surface	δ-BHC (10^{-9})	0.04
The Dalian Bay	8					Jul-99	surface	δ-BHC (10^{-9})	0.07
The Dalian Bay	9					Jul-99	surface	δ-BHC (10^{-9})	ND
The Dalian Bay	10					Jul-99	surface	δ-BHC (10^{-9})	0.09
The Dalian Bay	2					Jul-97	surface	δ-BHC (10^{-9})	0.152
The Dalian Bay	3					Jul-97	surface	δ-BHC (10^{-9})	0.033
The Dalian Bay	7					Jul-97	surface	δ-BHC (10^{-9})	0.041
The Dalian Bay	9					Jul-97	surface	δ-BHC (10^{-9})	0.068
The Dalian Bay	12					Jul-97	surface	δ-BHC (10^{-9})	0.040
The Dalian Bay	17					Jul-97	surface	δ-BHC (10^{-9})	0.078
The Dalian Bay	18					Jul-97	surface	δ-BHC (10^{-9})	0.065
The Dalian Bay	20					Jul-97	surface	δ-BHC (10^{-9})	0.087
The Dalian Bay	D1					Jul-99	surface	δ-HCH (10^{-9})	0.15
The Dalian Bay	D2					Jul-99	surface	δ-HCH (10^{-9})	0.03
The Dalian Bay	D3					Jul-99	surface	δ-HCH (10^{-9})	ND
The Dalian Bay	D4					Jul-99	surface	δ-HCH (10^{-9})	0.07
The Dalian Bay	D5					Jul-99	surface	δ-HCH (10^{-9})	0.04
The Dalian Bay	D6					Jul-99	surface	δ-HCH (10^{-9})	0.08
The Dalian Bay	D7					Jul-99	surface	δ-HCH (10^{-9})	0.04
The Dalian Bay	D8					Jul-99	surface	δ-HCH (10^{-9})	0.07
The Dalian Bay	D9					Jul-99	surface	δ-HCH (10^{-9})	ND
The Dalian Bay	D10					Jul-99	surface	δ-HCH (10^{-9})	0.09

The Dalian Bay	1					Jul-99	surface	Aldrin (ng/g)	0.86
The Dalian Bay	2					Jul-99	surface	Aldrin (ng/g)	0.13
The Dalian Bay	3					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	4					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	5					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	6					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	7					Jul-99	surface	Aldrin (ng/g)	0.11
The Dalian Bay	8					Jul-99	surface	Aldrin (ng/g)	0.29
The Dalian Bay	9					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	10					Jul-99	surface	Aldrin (ng/g)	ND
The Dalian Bay	2					Jul-99	surface	Perylene (ng/g)	78.00
The Dalian Bay	3					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	7					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	9					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	10					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	12					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	14					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	17					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	18					Jul-99	surface	Perylene (ng/g)	33.79
The Dalian Bay	20					Jul-99	surface	Perylene (ng/g)	
The Dalian Bay	2					Jul-99	surface	Benzo(e)Pyrene (ng/g)	332.67
The Dalian Bay	3					Jul-99	surface	Benzo(e)Pyrene (ng/g)	84.24
The Dalian Bay	7					Jul-99	surface	Benzo(e)Pyrene (ng/g)	
The Dalian Bay	9					Jul-99	surface	Benzo(e)Pyrene (ng/g)	52.24
The Dalian Bay	10					Jul-99	surface	Benzo(e)Pyrene (ng/g)	
The Dalian Bay	12					Jul-99	surface	Benzo(e)Pyrene (ng/g)	37.36
The Dalian Bay	14					Jul-99	surface	Benzo(e)Pyrene (ng/g)	

The Dalian Bay	17					Jul-99	surface	Benzo(e)Pyrene (ng/g)	
The Dalian Bay	18					Jul-99	surface	Benzo(e)Pyrene (ng/g)	121.16
The Dalian Bay	20					Jul-99	surface	Benzo(e)Pyrene (ng/g)	
The Dalian Bay	2					Jul-99	surface	Benzo(a)Anthracene (ng/g)	527.99
The Dalian Bay	3					Jul-99	surface	Benzo(a)Anthracene (ng/g)	103.35
The Dalian Bay	7					Jul-99	surface	Benzo(a)Anthracene (ng/g)	
The Dalian Bay	9					Jul-99	surface	Benzo(a)Anthracene (ng/g)	79.84
The Dalian Bay	10					Jul-99	surface	Benzo(a)Anthracene (ng/g)	36.32
The Dalian Bay	12					Jul-99	surface	Benzo(a)Anthracene (ng/g)	4.57
The Dalian Bay	14					Jul-99	surface	Benzo(a)Anthracene (ng/g)	
The Dalian Bay	17					Jul-99	surface	Benzo(a)Anthracene (ng/g)	283.91
The Dalian Bay	18					Jul-99	surface	Benzo(a)Anthracene (ng/g)	27.72
The Dalian Bay	20					Jul-99	surface	Benzo(a)Anthracene (ng/g)	
The Dalian Bay	2					Jul-99	surface	Benzo(a)Pyrene (ng/g)	249.32
The Dalian Bay	3					Jul-99	surface	Benzo(a)Pyrene (ng/g)	63.11
The Dalian Bay	7					Jul-99	surface	Benzo(a)Pyrene (ng/g)	
The Dalian Bay	9					Jul-99	surface	Benzo(a)Pyrene (ng/g)	44.65
The Dalian Bay	10					Jul-99	surface	Benzo(a)Pyrene (ng/g)	
The Dalian Bay	12					Jul-99	surface	Benzo(a)Pyrene (ng/g)	33.64
The Dalian Bay	14					Jul-99	surface	Benzo(a)Pyrene (ng/g)	
The Dalian Bay	17					Jul-99	surface	Benzo(a)Pyrene (ng/g)	
The Dalian Bay	18					Jul-99	surface	Benzo(a)Pyrene (ng/g)	107.47

The Dalian Bay	20					Jul-99	surface	Benzo(a)Pyrene (ng/g)	
The Dalian Bay	1					Jul-99	surface	Dieldrin (ng/g)	0.46
The Dalian Bay	2					Jul-99	surface	Dieldrin (ng/g)	0.04
The Dalian Bay	3					Jul-99	surface	Dieldrin (ng/g)	0.14
The Dalian Bay	4					Jul-99	surface	Dieldrin (ng/g)	ND
The Dalian Bay	5					Jul-99	surface	Dieldrin (ng/g)	0.08
The Dalian Bay	6					Jul-99	surface	Dieldrin (ng/g)	ND
The Dalian Bay	7					Jul-99	surface	Dieldrin (ng/g)	ND
The Dalian Bay	8					Jul-99	surface	Dieldrin (ng/g)	0.23
The Dalian Bay	9					Jul-99	surface	Dieldrin (ng/g)	ND
The Dalian Bay	10					Jul-99	surface	Dieldrin (ng/g)	ND
The Dalian Bay	2					Jul-99	surface	Anthracene (ng/g)	54.09
The Dalian Bay	3					Jul-99	surface	Anthracene (ng/g)	19.18
The Dalian Bay	7					Jul-99	surface	Anthracene (ng/g)	34.43
The Dalian Bay	9					Jul-99	surface	Anthracene (ng/g)	19.94
The Dalian Bay	10					Jul-99	surface	Anthracene (ng/g)	9.44
The Dalian Bay	12					Jul-99	surface	Anthracene (ng/g)	26.70
The Dalian Bay	14					Jul-99	surface	Anthracene (ng/g)	8.72
The Dalian Bay	17					Jul-99	surface	Anthracene (ng/g)	113.97
The Dalian Bay	18					Jul-99	surface	Anthracene (ng/g)	4.51
The Dalian Bay	20					Jul-99	surface	Anthracene (ng/g)	4.14
The Dalian Bay	2					Jul-99	surface	Phenanthrene (ng/g)	271.41
The Dalian Bay	3					Jul-99	surface	Phenanthrene (ng/g)	101.23
The Dalian Bay	7					Jul-99	surface	Phenanthrene (ng/g)	11.92
The Dalian Bay	9					Jul-99	surface	Phenanthrene (ng/g)	103.92
The Dalian Bay	10					Jul-99	surface	Phenanthrene (ng/g)	22.28
The Dalian Bay	12					Jul-99	surface	Phenanthrene (ng/g)	42.43

The Dalian Bay	14					Jul-99	surface	Phenanthrene (ng/g)	
The Dalian Bay	17					Jul-99	surface	Phenanthrene (ng/g)	366.09
The Dalian Bay	18					Jul-99	surface	Phenanthrene (ng/g)	23.23
The Dalian Bay	20					Jul-99	surface	Phenanthrene (ng/g)	6.24
The Dalian Bay	1					Jul-99	surface	ENDosulfan (ng/g)	0.13
The Dalian Bay	2					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	3					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	4					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	5					Jul-99	surface	ENDosulfan (ng/g)	0.04
The Dalian Bay	6					Jul-99	surface	ENDosulfan (ng/g)	0.12
The Dalian Bay	7					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	8					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	9					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	10					Jul-99	surface	ENDosulfan (ng/g)	ND
The Dalian Bay	1					Jul-99	surface	HCHs[2] (ng/g)	6.51
The Dalian Bay	2					Jul-99	surface	HCHs[2] (ng/g)	3.21
The Dalian Bay	3					Jul-99	surface	HCHs[2] (ng/g)	1.22
The Dalian Bay	4					Jul-99	surface	HCHs[2] (ng/g)	1.85
The Dalian Bay	5					Jul-99	surface	HCHs[2] (ng/g)	1.79
The Dalian Bay	6					Jul-99	surface	HCHs[2] (ng/g)	7.96
The Dalian Bay	7					Jul-99	surface	HCHs[2] (ng/g)	2.40
The Dalian Bay	8					Jul-99	surface	HCHs[2] (ng/g)	3.01
The Dalian Bay	9					Jul-99	surface	HCHs[2] (ng/g)	1.11
The Dalian Bay	10					Jul-99	surface	HCHs[2] (ng/g)	2.54
The Dalian Bay	1					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	2					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	3					Jul-99	surface	HCB (ng/g)	0.11

The Dalian Bay	4					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	5					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	6					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	7					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	8					Jul-99	surface	HCB (ng/g)	0.37
The Dalian Bay	9					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	10					Jul-99	surface	HCB (ng/g)	ND
The Dalian Bay	2					Jul-99	surface	Naphthalene (ng/g)	702.66
The Dalian Bay	3					Jul-99	surface	Naphthalene (ng/g)	144.87
The Dalian Bay	7					Jul-99	surface	Naphthalene (ng/g)	24.10
The Dalian Bay	9					Jul-99	surface	Naphthalene (ng/g)	48.83
The Dalian Bay	10					Jul-99	surface	Naphthalene (ng/g)	15.36
The Dalian Bay	12					Jul-99	surface	Naphthalene (ng/g)	47.28
The Dalian Bay	14					Jul-99	surface	Naphthalene (ng/g)	
The Dalian Bay	17					Jul-99	surface	Naphthalene (ng/g)	26.39
The Dalian Bay	18					Jul-99	surface	Naphthalene (ng/g)	19.31
The Dalian Bay	20					Jul-99	surface	Naphthalene (ng/g)	24.66
The Dalian Bay	2					Jul-99	surface	Pyrene (ng/g)	383.29
The Dalian Bay	3					Jul-99	surface	Pyrene (ng/g)	108.58
The Dalian Bay	7					Jul-99	surface	Pyrene (ng/g)	67.73
The Dalian Bay	9					Jul-99	surface	Pyrene (ng/g)	107.74
The Dalian Bay	10					Jul-99	surface	Pyrene (ng/g)	29.89
The Dalian Bay	12					Jul-99	surface	Pyrene (ng/g)	124.06
The Dalian Bay	14					Jul-99	surface	Pyrene (ng/g)	12.90
The Dalian Bay	17					Jul-99	surface	Pyrene (ng/g)	642.30
The Dalian Bay	18					Jul-99	surface	Pyrene (ng/g)	44.75
The Dalian Bay	20					Jul-99	surface	Pyrene (ng/g)	44.75

The Dalian Bay	1					Jul-99	surface	Heptachlor (ng/g)	1.52
The Dalian Bay	2					Jul-99	surface	Heptachlor (ng/g)	0.37
The Dalian Bay	3					Jul-99	surface	Heptachlor (ng/g)	ND
The Dalian Bay	4					Jul-99	surface	Heptachlor (ng/g)	0.17
The Dalian Bay	5					Jul-99	surface	Heptachlor (ng/g)	ND
The Dalian Bay	6					Jul-99	surface	Heptachlor (ng/g)	1.12
The Dalian Bay	7					Jul-99	surface	Heptachlor (ng/g)	0.34
The Dalian Bay	8					Jul-99	surface	Heptachlor (ng/g)	0.36
The Dalian Bay	9					Jul-99	surface	Heptachlor (ng/g)	ND
The Dalian Bay	10					Jul-99	surface	Heptachlor (ng/g)	0.20
The Dalian Bay	2					Jul-99	surface	Chrysene（ng/g)	410.42
The Dalian Bay	3					Jul-99	surface	Chrysene (ng/g)	179.50
The Dalian Bay	7					Jul-99	surface	Chrysene (ng/g)	
The Dalian Bay	9					Jul-99	surface	Chrysene (ng/g)	138.97
The Dalian Bay	10					Jul-99	surface	Chrysene (ng/g)	32.29
The Dalian Bay	12					Jul-99	surface	Chrysene (ng/g)	79.66
The Dalian Bay	14					Jul-99	surface	Chrysene (ng/g)	11.08
The Dalian Bay	17					Jul-99	surface	Chrysene (ng/g)	397.74
The Dalian Bay	18					Jul-99	surface	Chrysene (ng/g)	28.95
The Dalian Bay	20					Jul-99	surface	Chrysene (ng/g)	
The Dalian Bay	2	2				Jul-99	surface	Fluorene（ng/g)	395.83
The Dalian Bay	3					Jul-99	surface	Fluorene (ng/g)	74.70
The Dalian Bay	7					Jul-99	surface	Fluorene (ng/g)	45.06
The Dalian Bay	9					Jul-99	surface	Fluorene (ng/g)	
The Dalian Bay	10					Jul-99	surface	Fluorene (ng/g)	
The Dalian Bay	12					Jul-99	surface	Fluorene (ng/g)	
The Dalian Bay	14					Jul-99	surface	Fluorene (ng/g)	

The Dalian Bay	17						Jul-99	surface	Fluorene (ng/g)	7.54
The Dalian Bay	18						Jul-99	surface	Fluorene (ng/g)	19.19
The Dalian Bay	20						Jul-99	surface	Fluorene (ng/g)	
The Dalian Bay	2						Jul-99	surface	Fluoranthene（ng/g)	484.35
The Dalian Bay	3						Jul-99	surface	Fluoranthene (ng/g)	91.62
The Dalian Bay	7						Jul-99	surface	Fluoranthene (ng/g)	44.31
The Dalian Bay	9						Jul-99	surface	Fluoranthene (ng/g)	64.61
The Dalian Bay	10						Jul-99	surface	Fluoranthene (ng/g)	22.22
The Dalian Bay	12						Jul-99	surface	Fluoranthene (ng/g)	23.43
The Dalian Bay	14						Jul-99	surface	Fluoranthene (ng/g)	
The Dalian Bay	17						Jul-99	surface	Fluoranthene (ng/g)	338.64
The Dalian Bay	18						Jul-99	surface	Fluoranthene (ng/g)	41.73
The Dalian Bay	20						Jul-99	surface	Fluoranthene (ng/g)	41.04
The Dalian Bay	1						Jul-99	surface	OCPs[14] (ng/g)	13.57
The Dalian Bay	2						Jul-99	surface	OCPs[14] (ng/g)	5.22
The Dalian Bay	3						Jul-99	surface	OCPs[14] (ng/g)	3.38
The Dalian Bay	4						Jul-99	surface	OCPs[14] (ng/g)	3.07
The Dalian Bay	5						Jul-99	surface	OCPs[14] (ng/g)	2.64
The Dalian Bay	6						Jul-99	surface	OCPs[14] (ng/g)	15.92
The Dalian Bay	7						Jul-99	surface	OCPs[14] (ng/g)	4.53
The Dalian Bay	8						Jul-99	surface	OCPs[14] (ng/g)	5.93
The Dalian Bay	9						Jul-99	surface	OCPs[14] (ng/g)	2.54
The Dalian Bay	10						Jul-99	surface	OCPs[14] (ng/g)	4.94

Note: ND, Not detected

[1] DDTs Including p.p’-DDD, p.p’-DDE, p.p’-DDT

[2] HCHs (BHCs) Including α-HCH, β-HCH, γ-HCH, δ-HCH (α-BHC, β-BHC, γ-BHC, δ-BHC)

[3] OCPs Including p.p’-DDD, p.p’-DDE, p.p’-DDT, α-HCH, β-HCH, γ-HCH, δ-HCH, Heptachlor, Aldrin

[4] ∑MP, Including Methyl-phenanthrene, DiMethyl-phenanthrene, TriMethyl-phenanthrene

[5] PAHs Including Naphthalene, Acenaphthylene, Acenaphthenequinone, Fluorene, Methyl-phenanthrene, Dimethyl-phenanthrene, Trimethyl-phenanthrene, Rhamnetin, Fluoranthene, Pyrene, Benzo(a)Anthracene + Chrysene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Benzo(e)Pyrene, Benzo(a)Pyrene, Perylene, INDeon(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(gih)Pyrene, Cornene

[6] BFl / BFl+BeP

[7] Bz[a]A/Bz[a]A+Chry= Benzo(a)Anthracene / (Benzo(a)Anthracene + Chrysene)

[8] Flu/Flu+Py= Fluoranthene / (Fluoranthene + Pyrene)

[9] Fluo/Fluo+Pyr= Fluoranthene / (Fluoranthene + Pyrene)

[10] IND/IND+B(ghi)P= INDeon(1,2,3-cd)pyrene / (INDeon(1,2,3-cd)pyrene+ Benzo(gih)Pyrene)

[11] P/A= Phenanthrene / Anthracene

[12] PAHs Including Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Perylene, Dibenzo(a,b)anthracene, Benzo(g,h,i)perylene, INDeno(1,2,3-cd)pyrene, ∑MP (Including Methyl-phenanthrene, DiMethyl-phenanthrene, TriMethyl-phenanthrene)

[13] PCBs Including PCB-28, PCB-101, PCB-112, PCB-118, PCB-138, PCB-153, PCB-155, PCB-180, PCB-198

[14] OCPs Including α-HCH, β-HCH, γ-HCH, δ-HCH, p.p'-DDD, p.p'-DDE, p.p'-DDT, Heptachlor, Aldrin, Dieldrin, HCB, ENDosulfan I

Korea National Pollution Data and Information Collection Activity

Draft Final Report

Pollution Data and Information Collection

This report contains information on the following parameters as indicated by the Project Management Office (PMO),

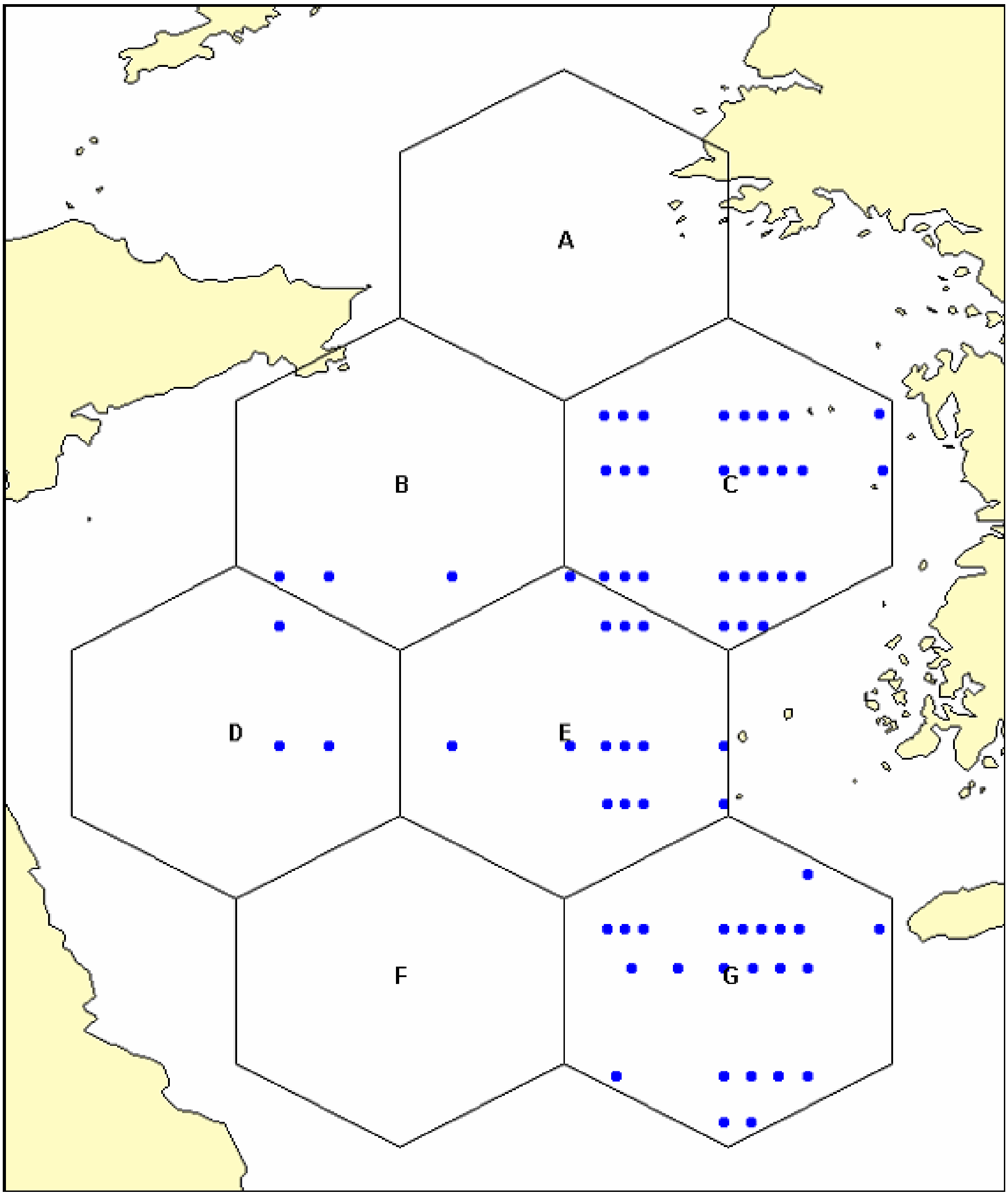
(i) Water Quality Characteristics (in the Korean waters of the Yellow Sea)

- Water quality characteristics including heavy metals and organic pollutants
- Physical water characteristics
- Heavy metals and organic pollutants in biota and sediment
- Dredging and dumping related information
- Other data and information described by PMO

I. Physical water characteristics:

Transparency:

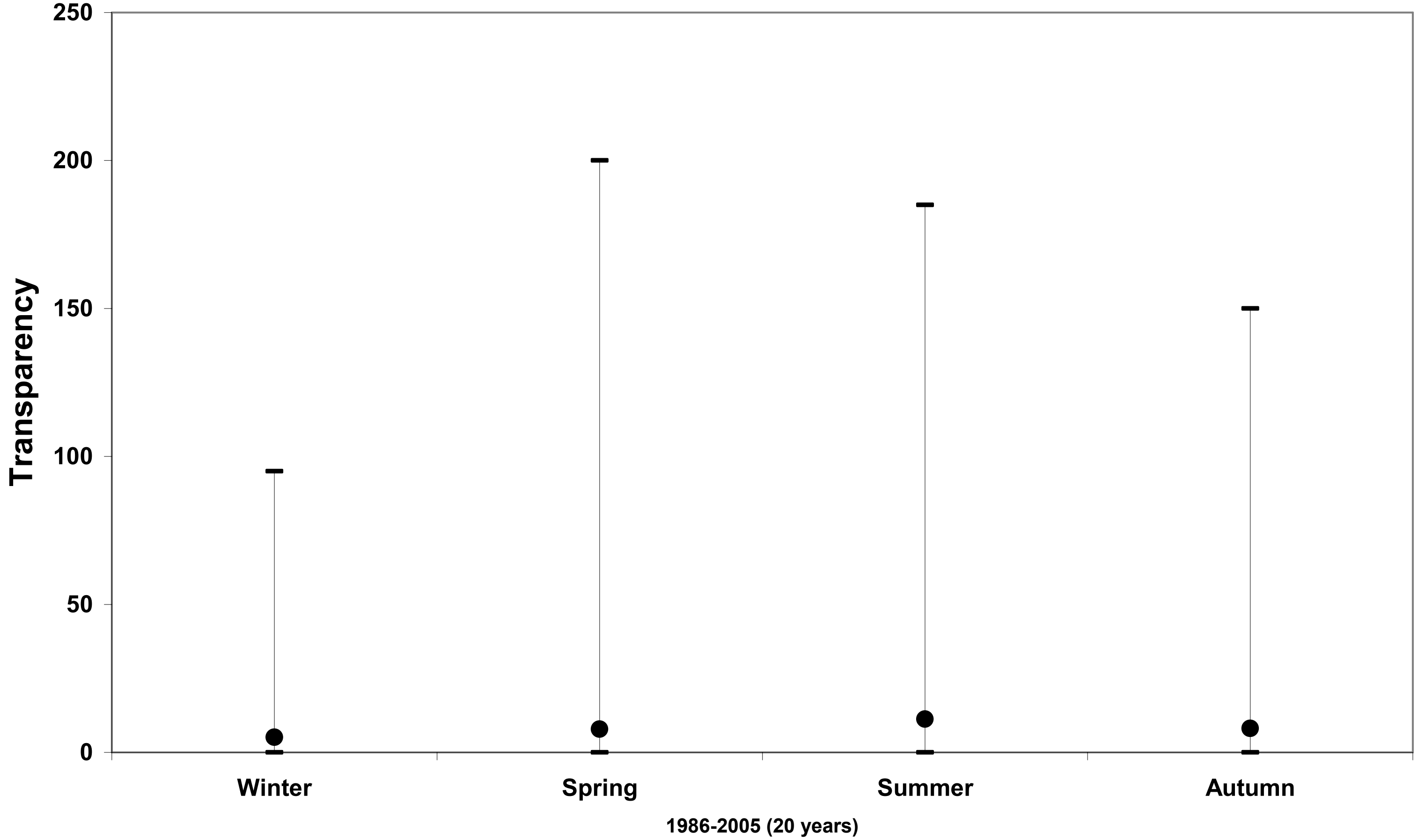
Data collection points are given in the following figures. Water transparency is an easy measurement that quickly tells a lot about water quality. First it indicates the amount of light penetration into the sea. Second, water transparency provides an indirect measure of the amount of suspended material in the water, which in many cases is an indication of the amount of algae in the water. Long-term monitoring helps to detect signs of degradation of a sea. The units given in the following figures are. Secchi transparency units. Though the average transparency of the Yellow sea remained with in an uniform range, individual variations during seasons were drastic reflecting the complex nature of natural ecosystem and the dynamism involved.



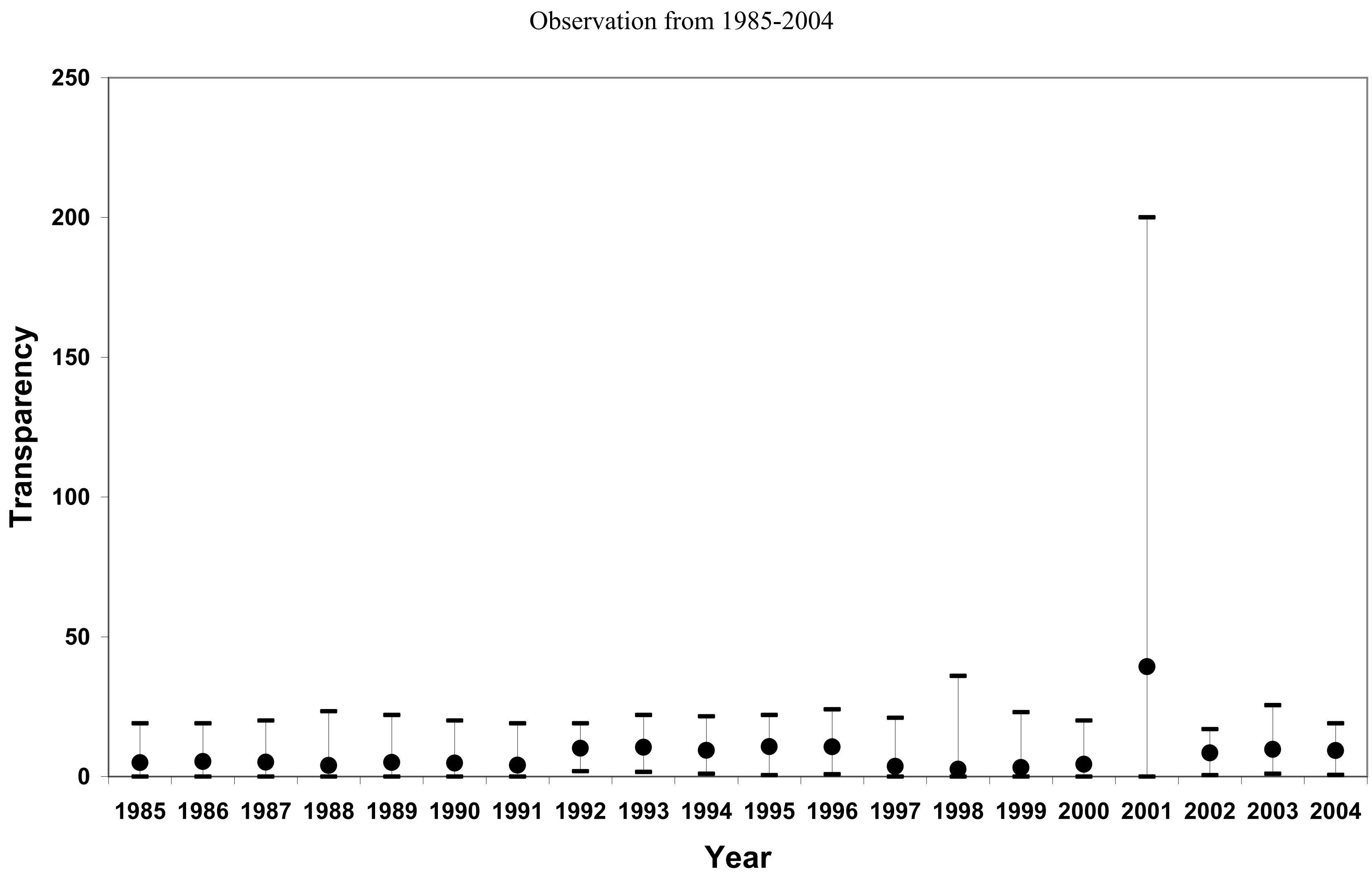
Transparency data points

The results are given in the following figures:

SEA WATER
PHYSICAL CHARACTERISTICS
TRANSPARENCY (20 years of observation)

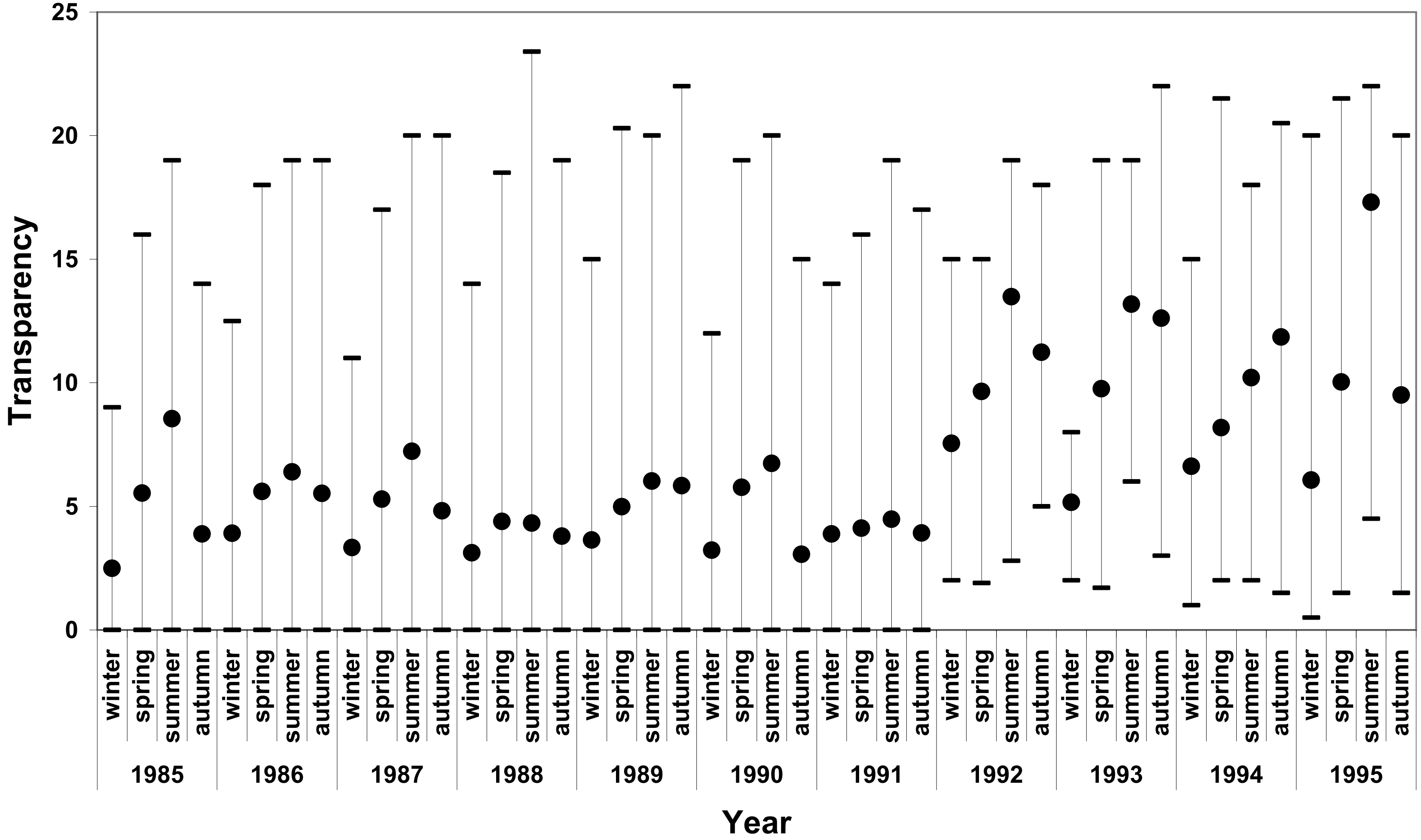


Winter (Jan-Mar); Spring (Apr-Jun); Summer (Jul-Sep); Autumn (Oct-Dec)

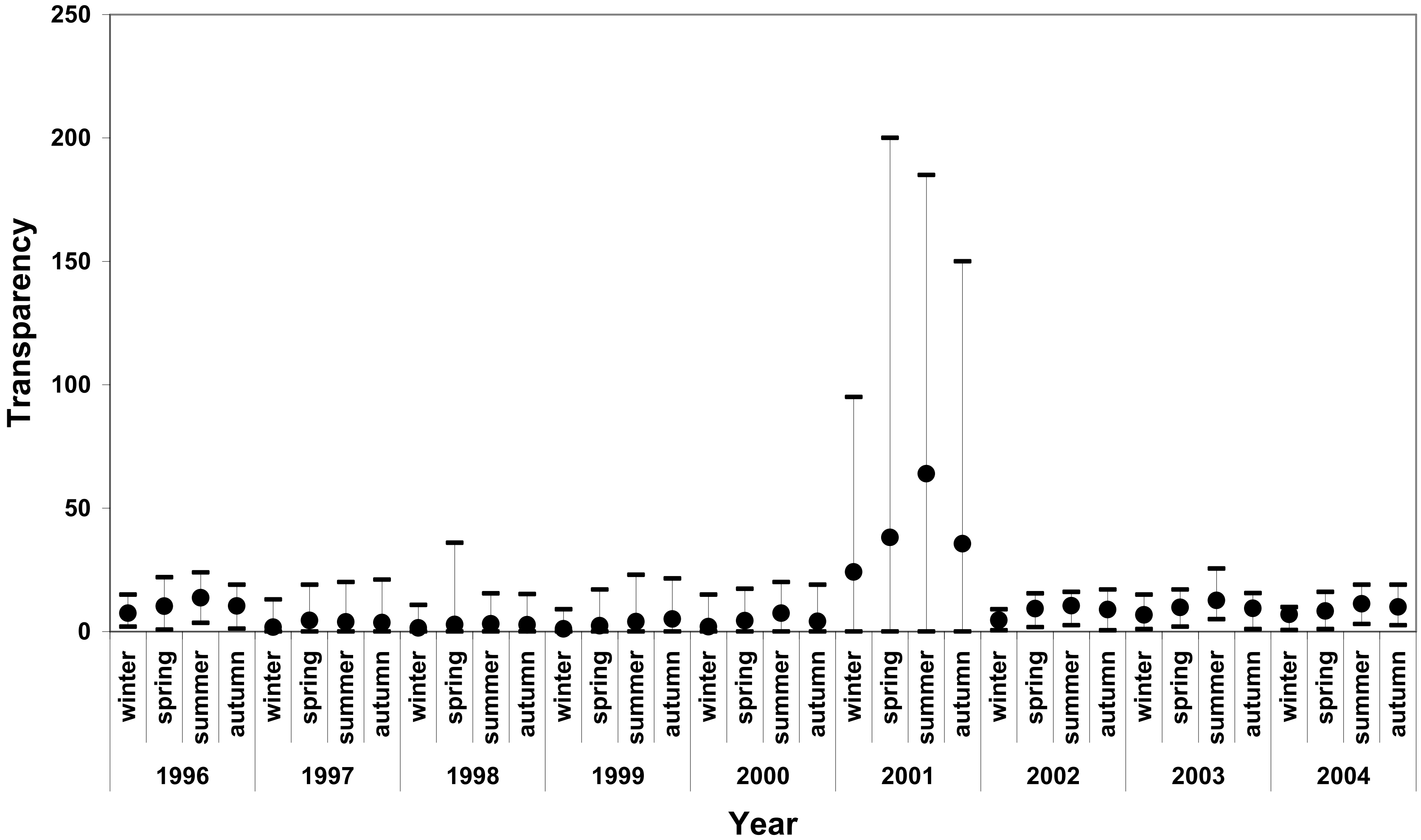


Observation from 1985-2004
Transparency
250
200
150
100
50
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year

Seasonal variation from 1985-1995

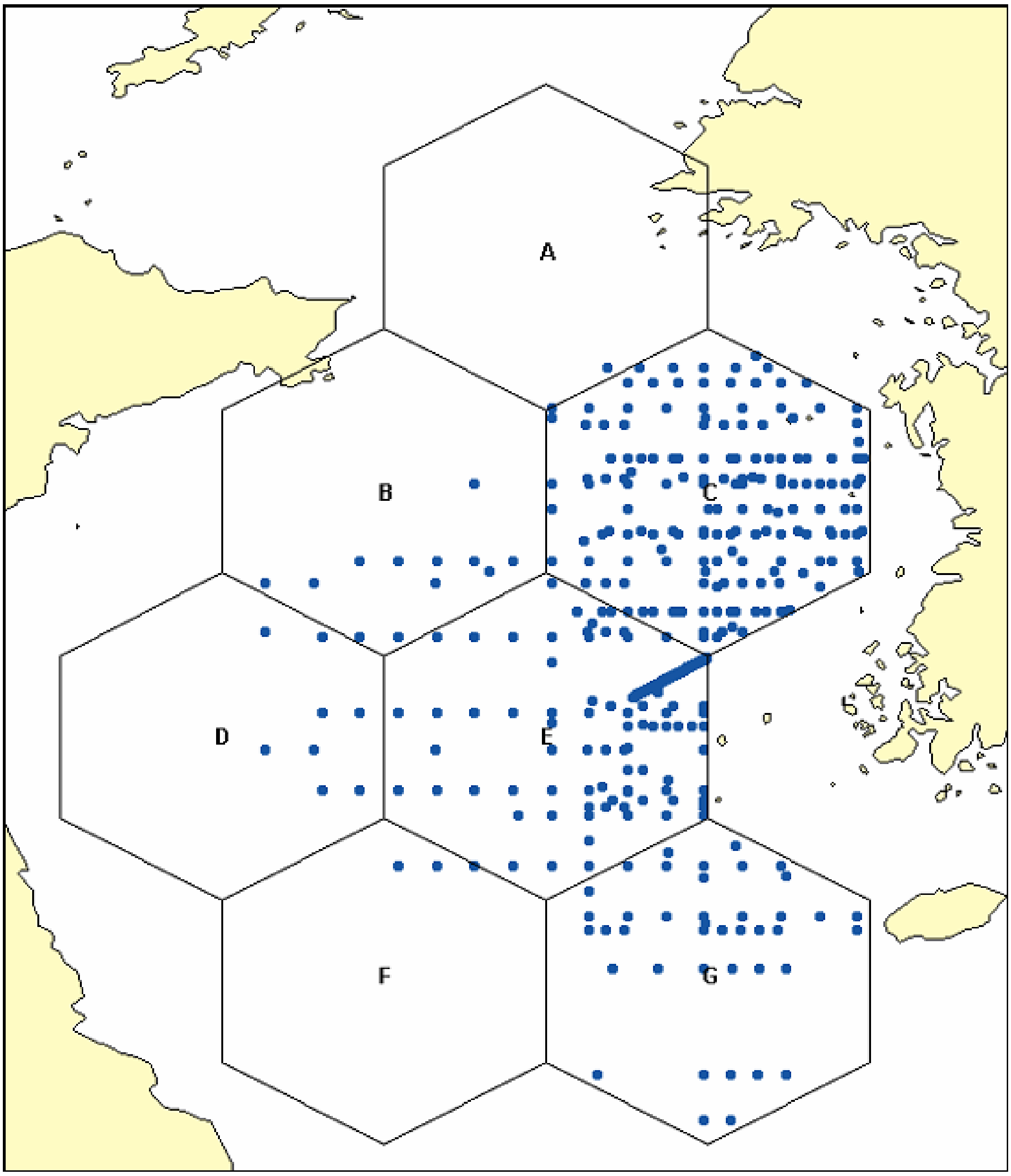


Seasonal variation from 1996-2004



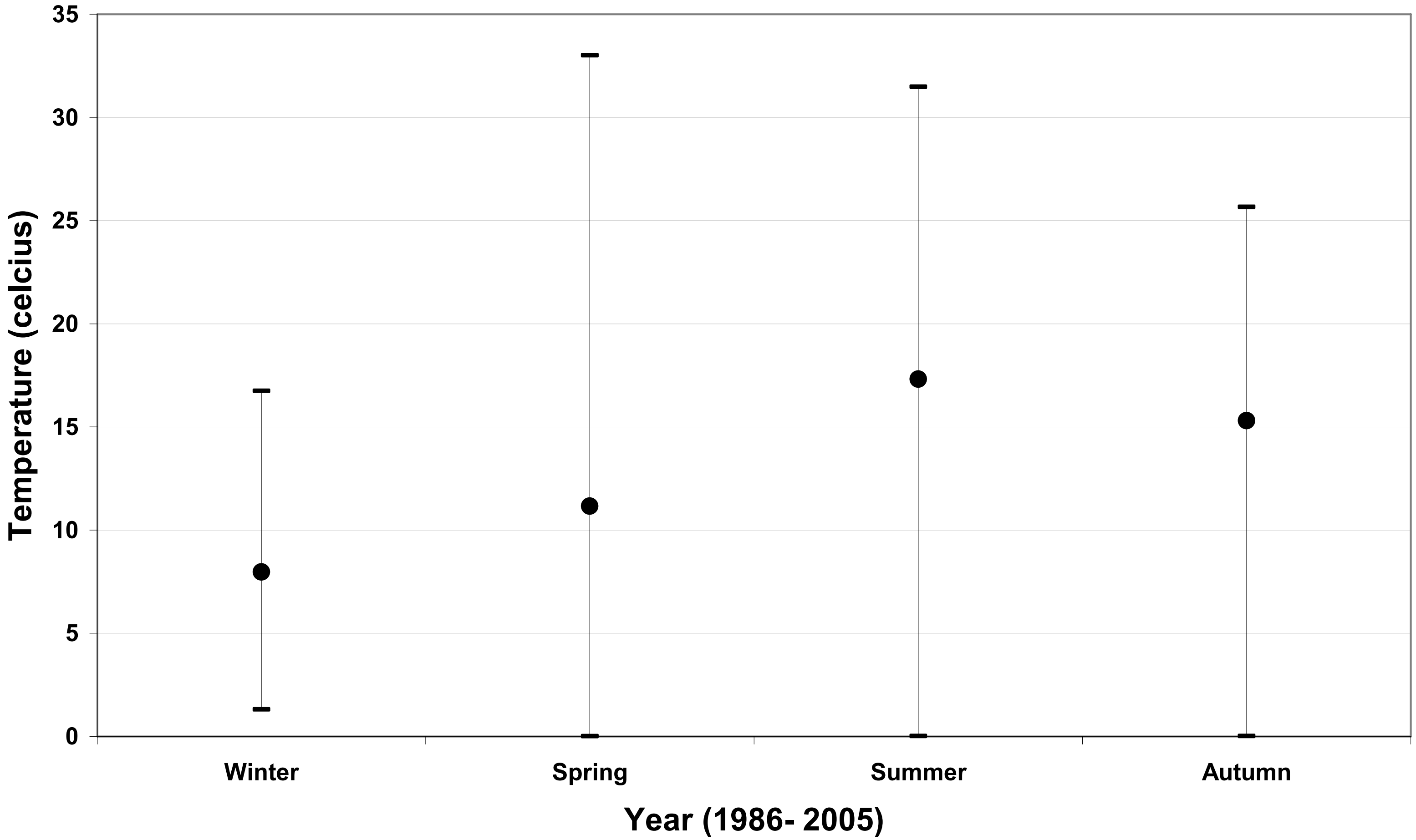
Temperature:

Water temperature is an essential parameter in water quality measurements as several physical and biological phenomena are temperature dependent. For example, Gas saturation in water such as 'dissolved oxygen (DO)'. Cold water can hold more of any gas, in this case oxygen, than warmer water. Warmer water becomes "saturated" more easily with oxygen. As water becomes warmer it can hold less and less DO. So, during the summer months in the warmer top portion of a lake, the total amount of oxygen present may be limited by temperature. If the water becomes too warm, even if 100% saturated, O2 levels may be suboptimal for many species of trout.

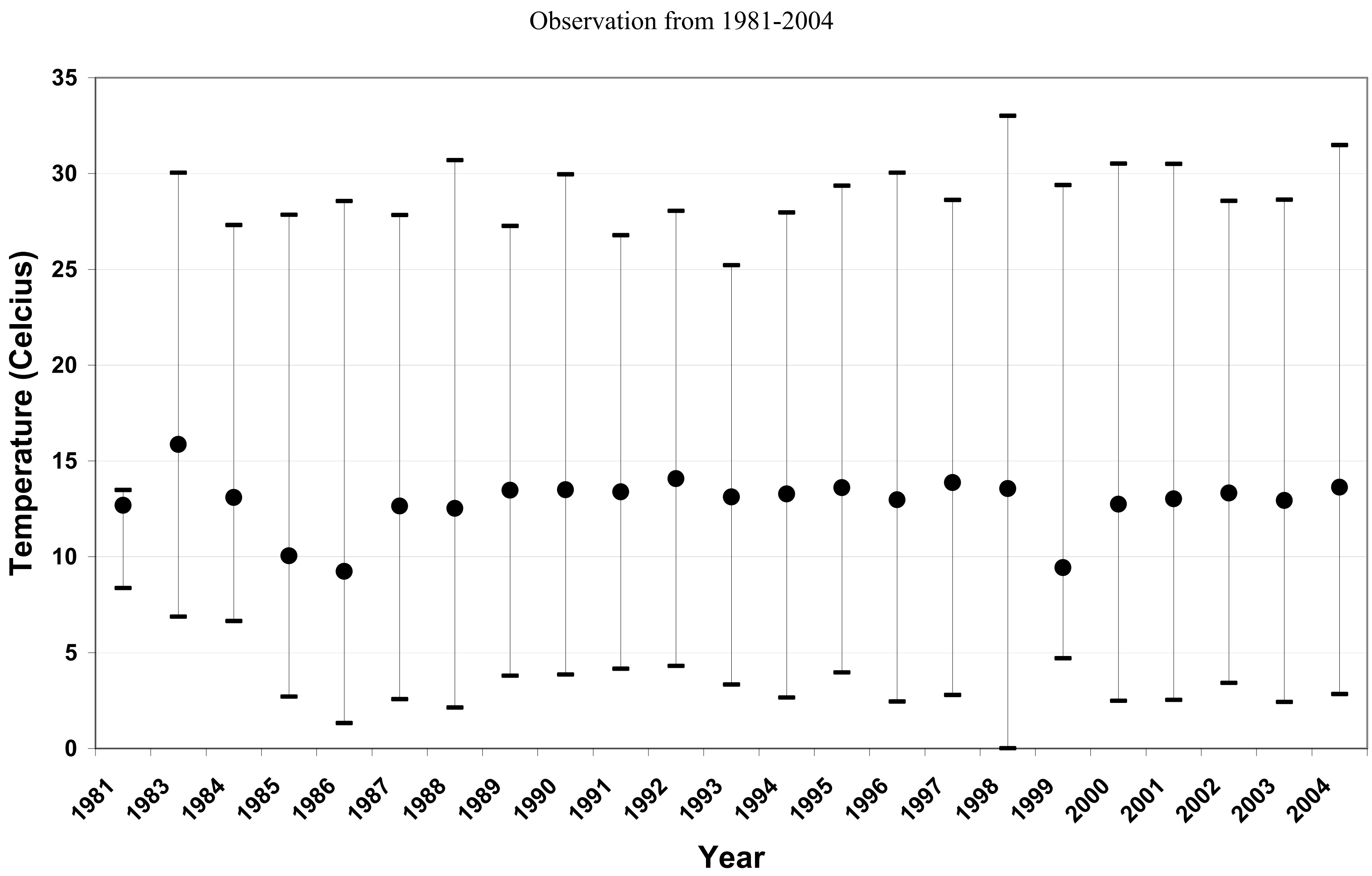


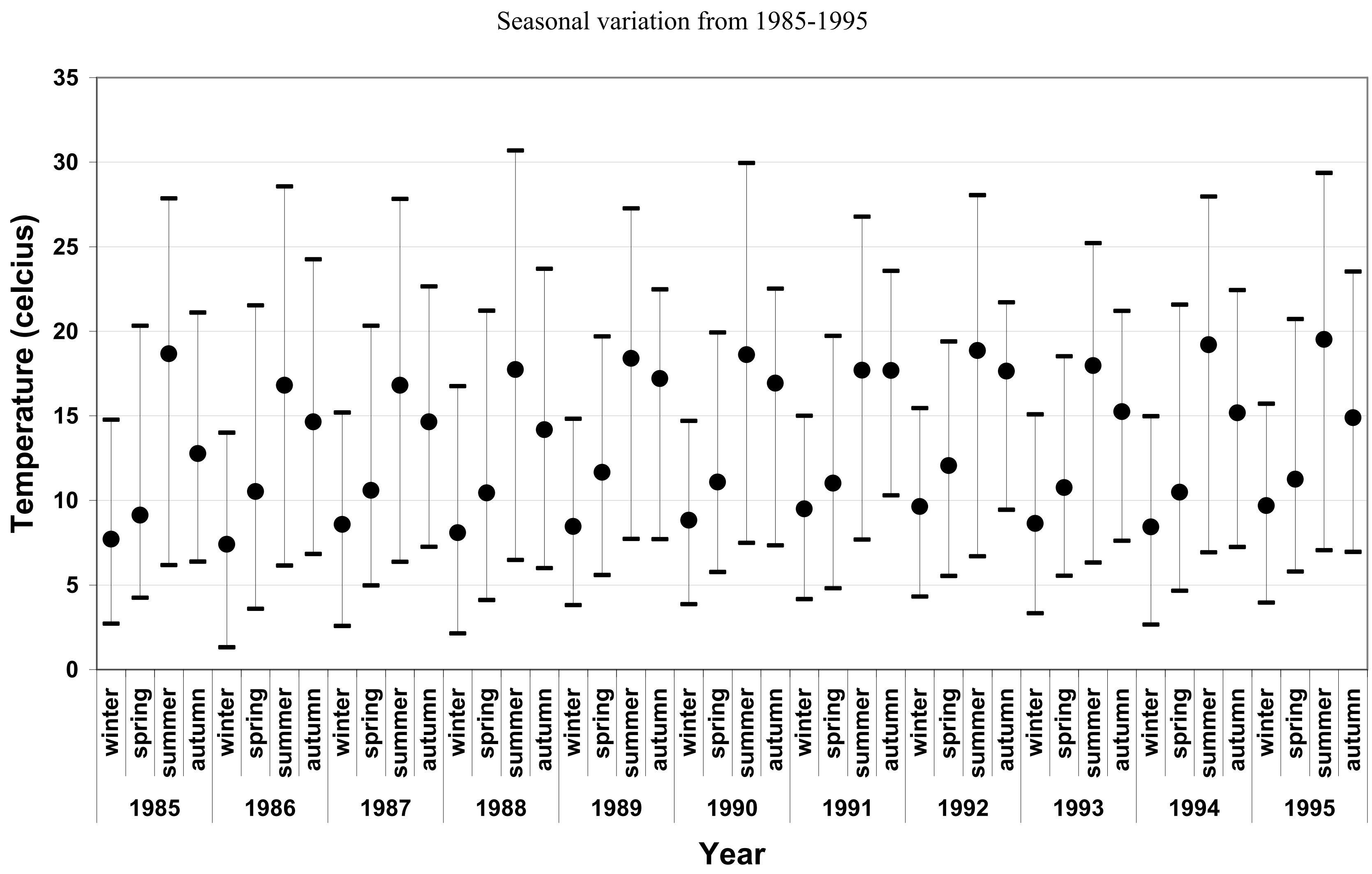
TEMPERATURE

Temperature in YSLME
20 years of observation



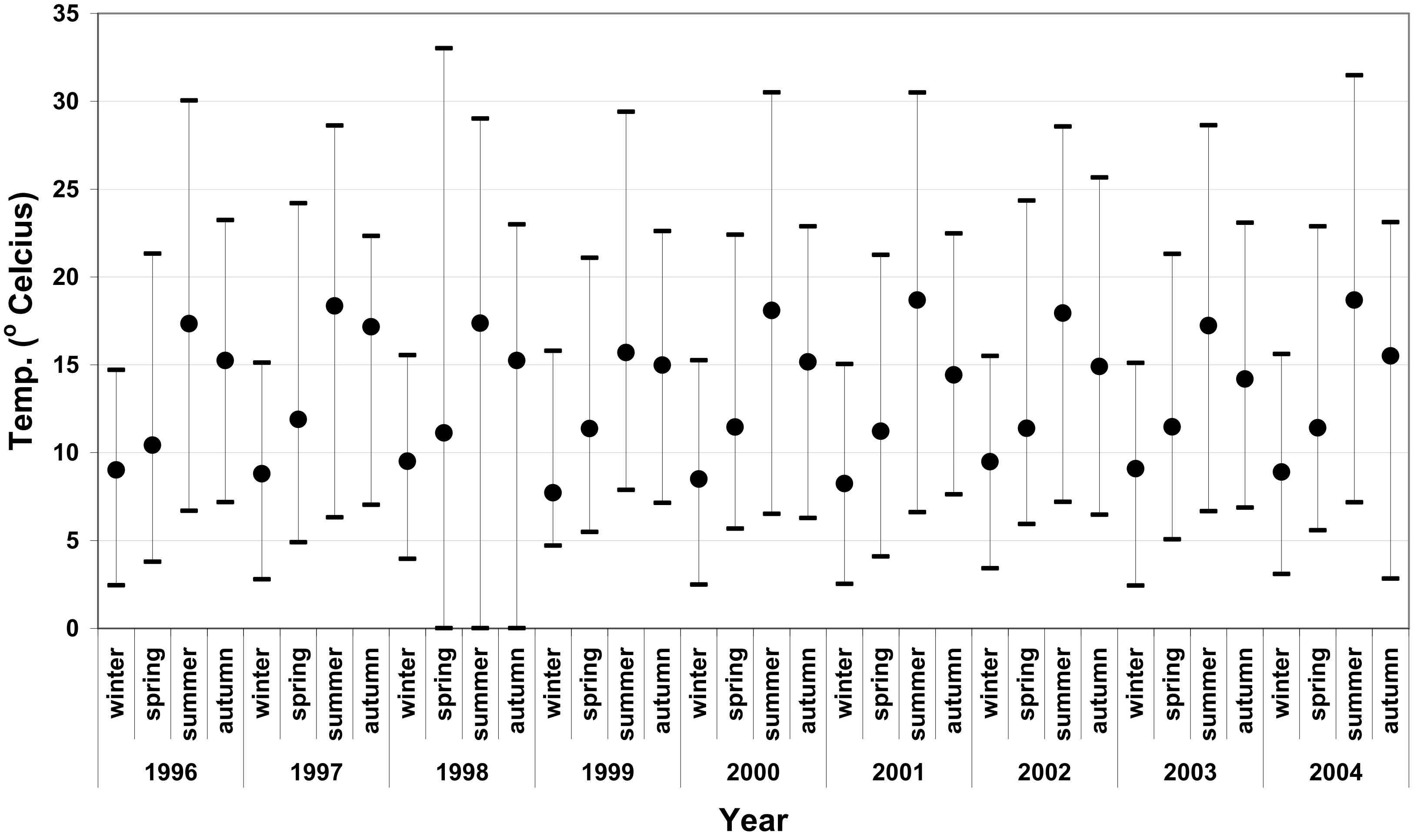
Winter (Jan-Mar); Spring (Apr-Jun); Summer (Jul-Sep); Autumn (Oct-Dec)


Observation from 1981-2004
Temperature (Celcius)
35
30
25
20
15
10
5
0
1981
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year



Seasonal variation from 1985-1995
Temperature (celcius)
35
30
25
20
15
10
5
0
winter
spring
summer
autumn
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Year

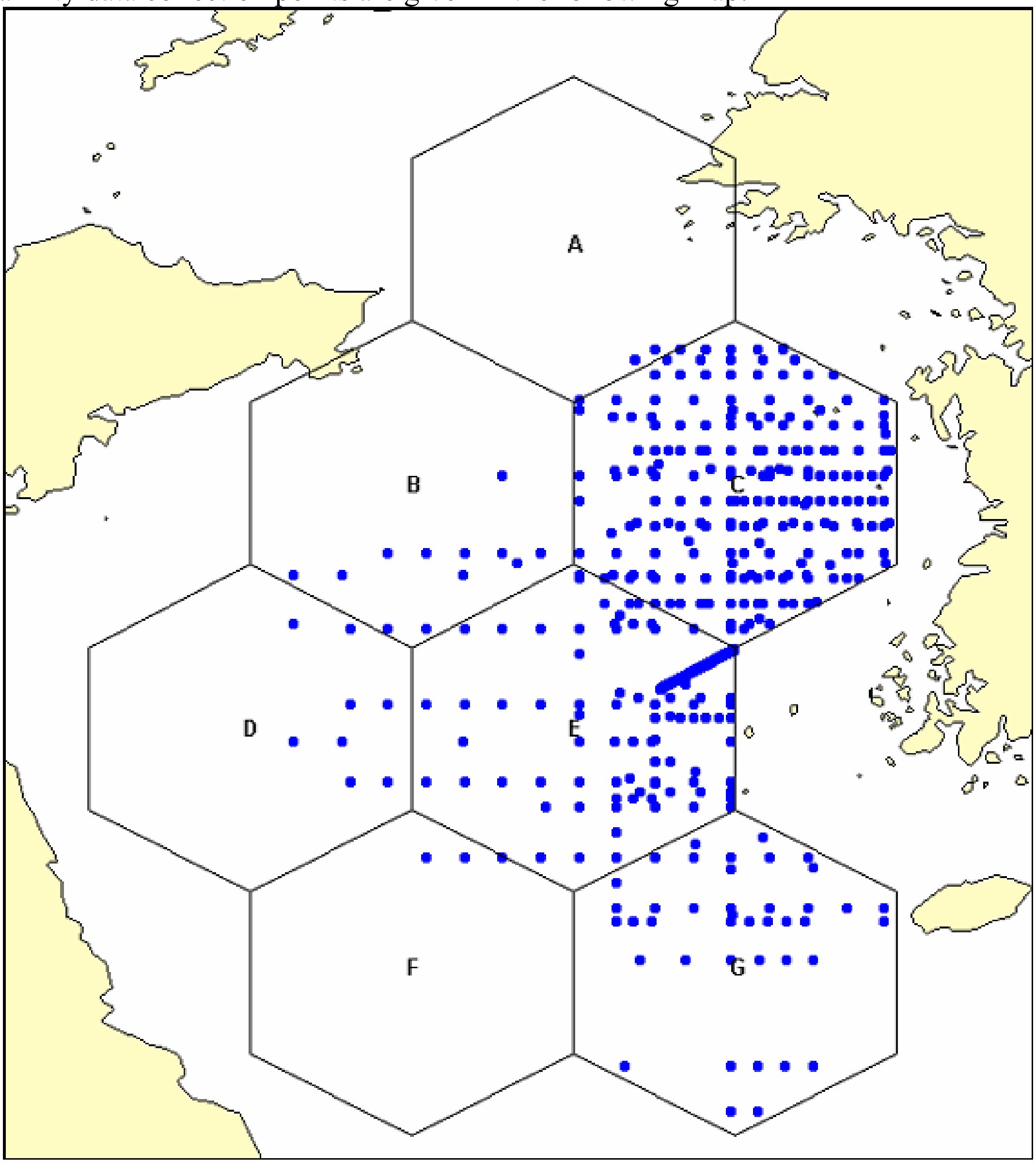
Seasonal variation



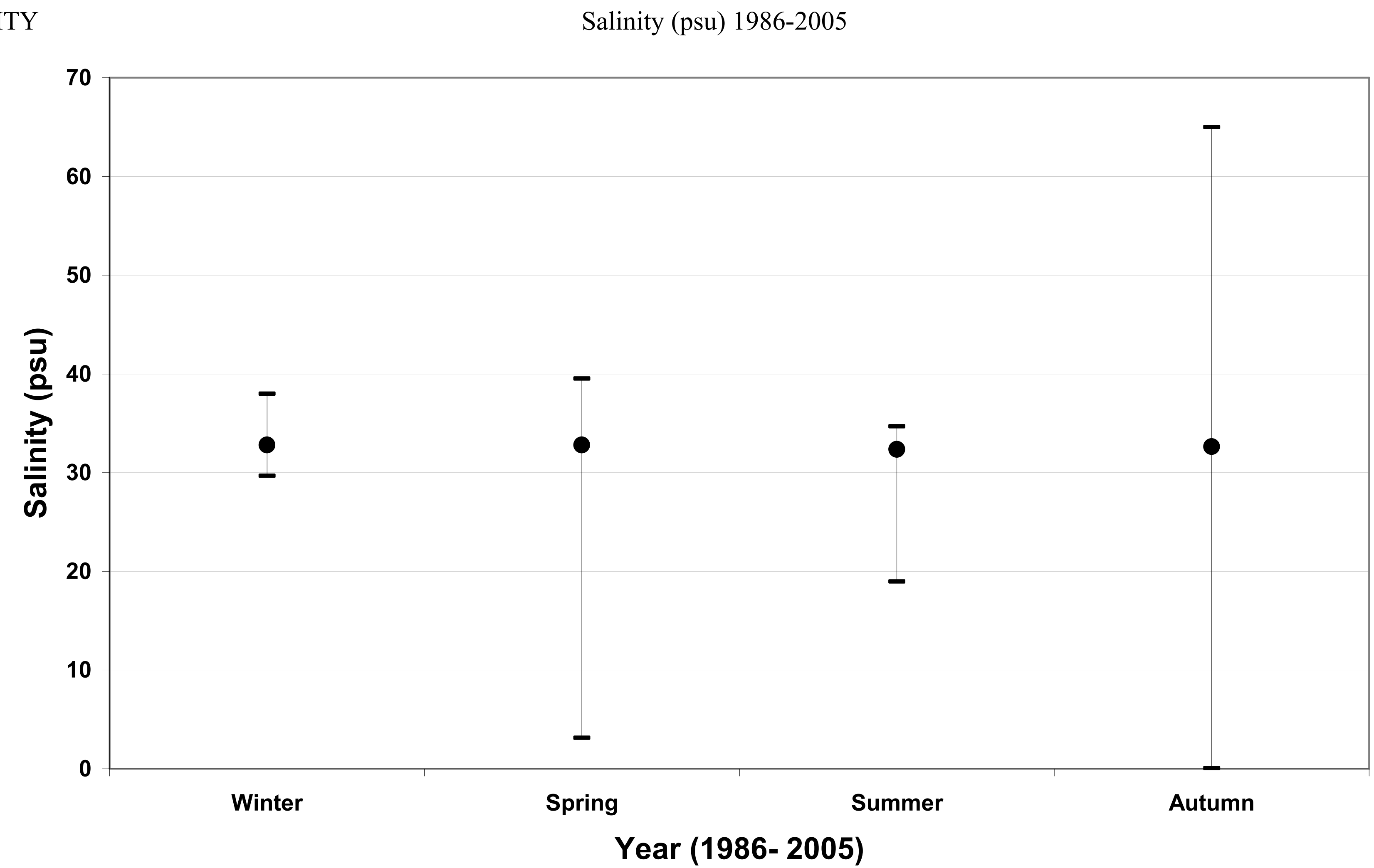
Salinity:

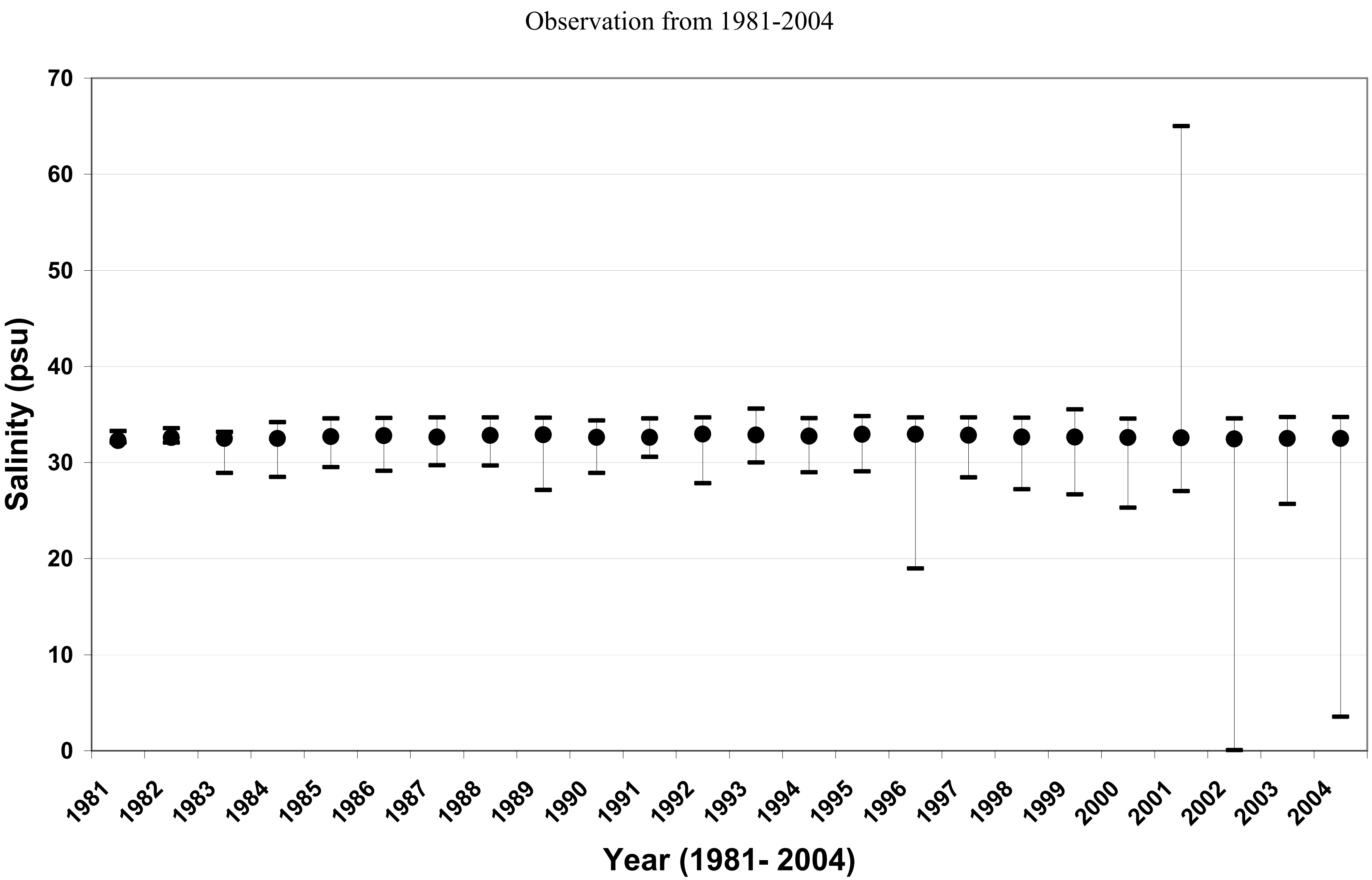
Salinity is the concentration of salt dissolved in water. It is normally expressed in parts per thousand or the grams of salt per 1000 grams of water sample (o/oo, ppt). An important characteristic of seawater is the property of "Constant Composition". This means that the ratio of the concentration of the major components is constant and is the same everywhere in the ocean. The salinity of the water may increase or decrease due to the loss or gain of water from evaporation, rainfall, freezing, melting, or other processes. During a rainstorm, freshwater will dilute the concentration of these components and the salinity will decrease. If water evaporates, these components are left behind causing the salinity of the remaining water to increase. Seawater has an average salinity of 35o/oo. Probably the most important aspect of salinity with regards to water quality is its effect on aquatic organisms. Salinity changes can affect the well being and distribution of biological populations.

Salinity data collection points are given in the following map:



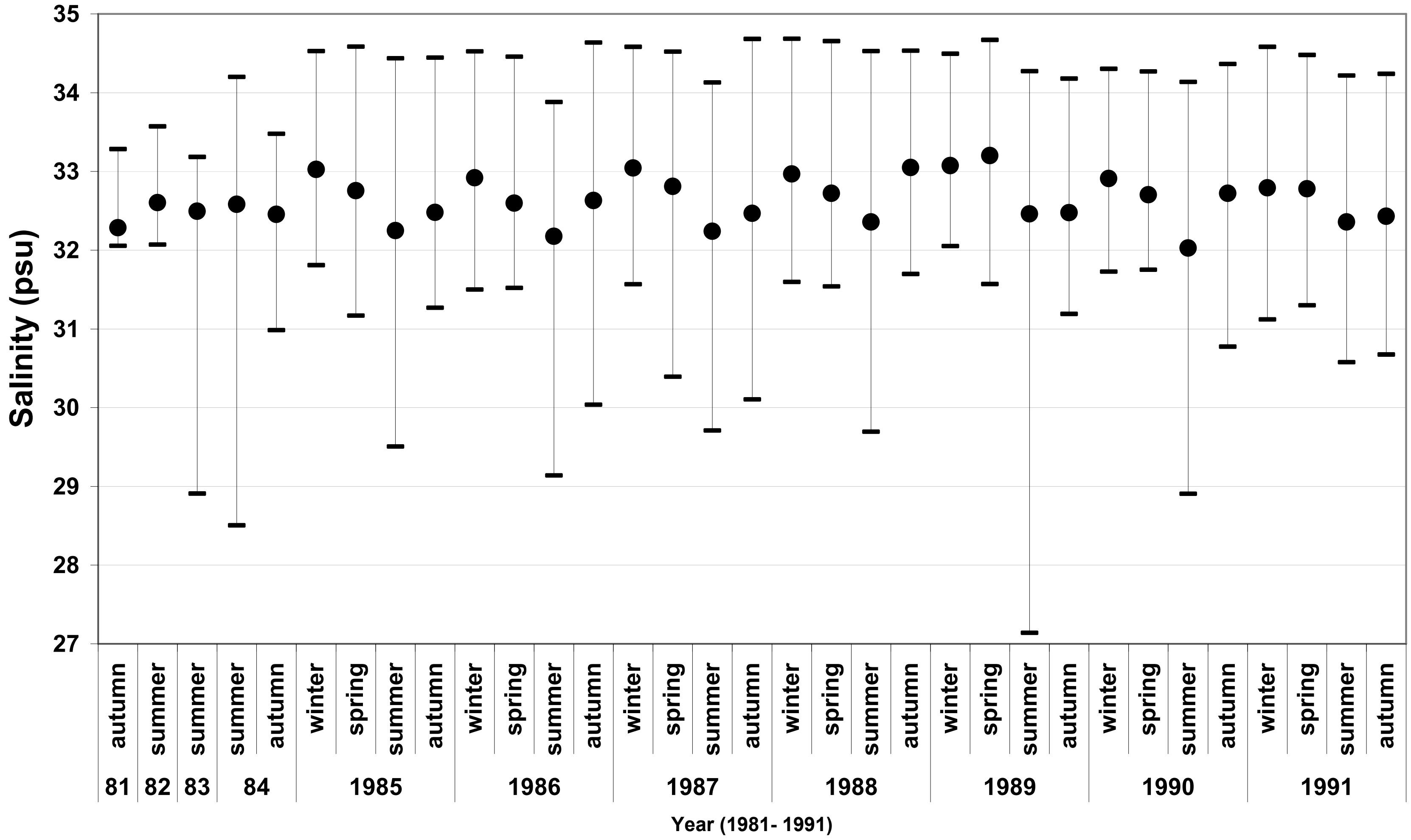
SALINITY


Salinity (psu) 1986-2005
70
60
50
40
30
20
10
0
Salinity (psu)
Winter
Spring
Summer
Autumn
Year (1986- 2005)

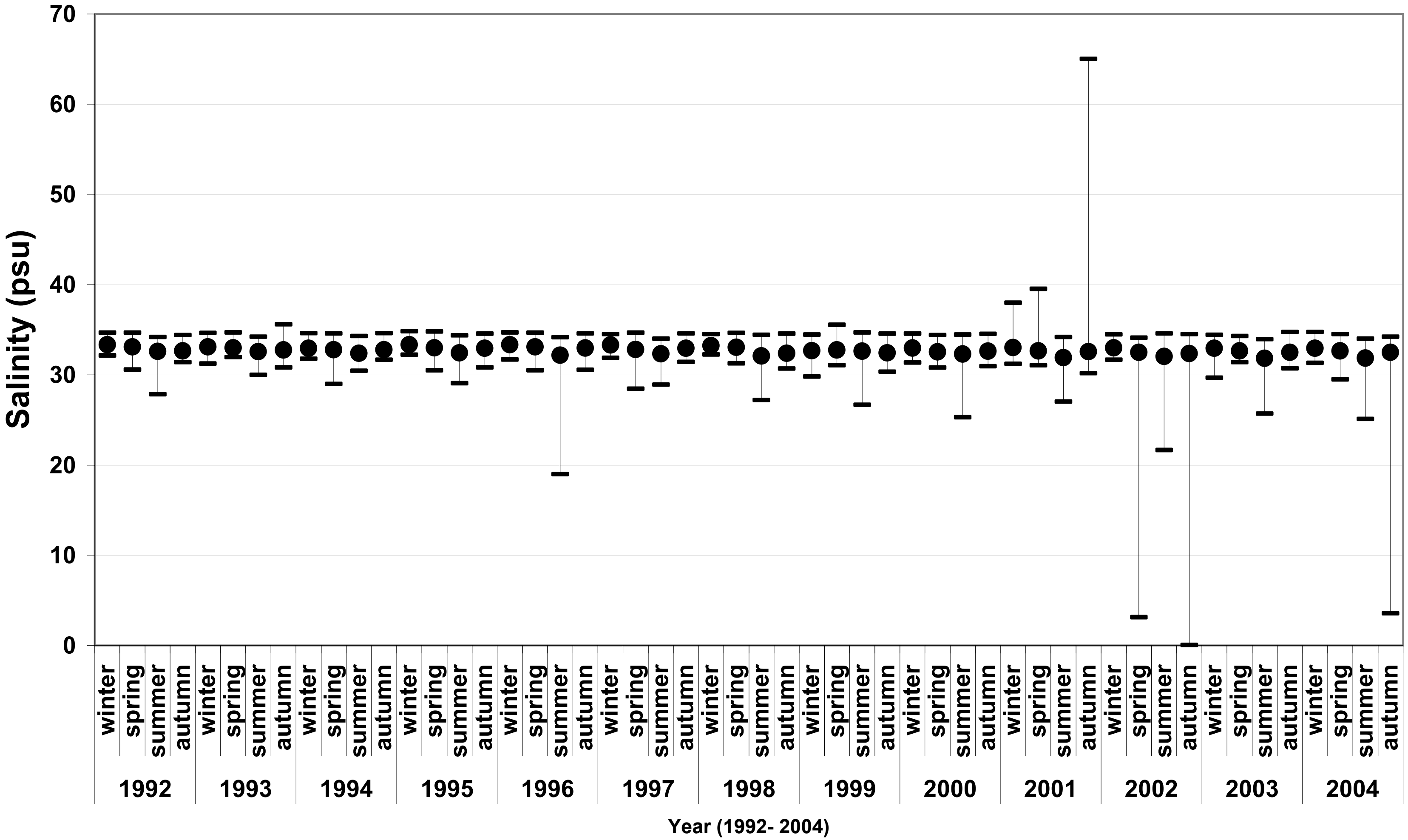


Observation from 1981-2004
70
60
50
40
30
20
10
0
Salinity (psu)
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year (1981- 2004)

Seasonal variation during 1981- 1991



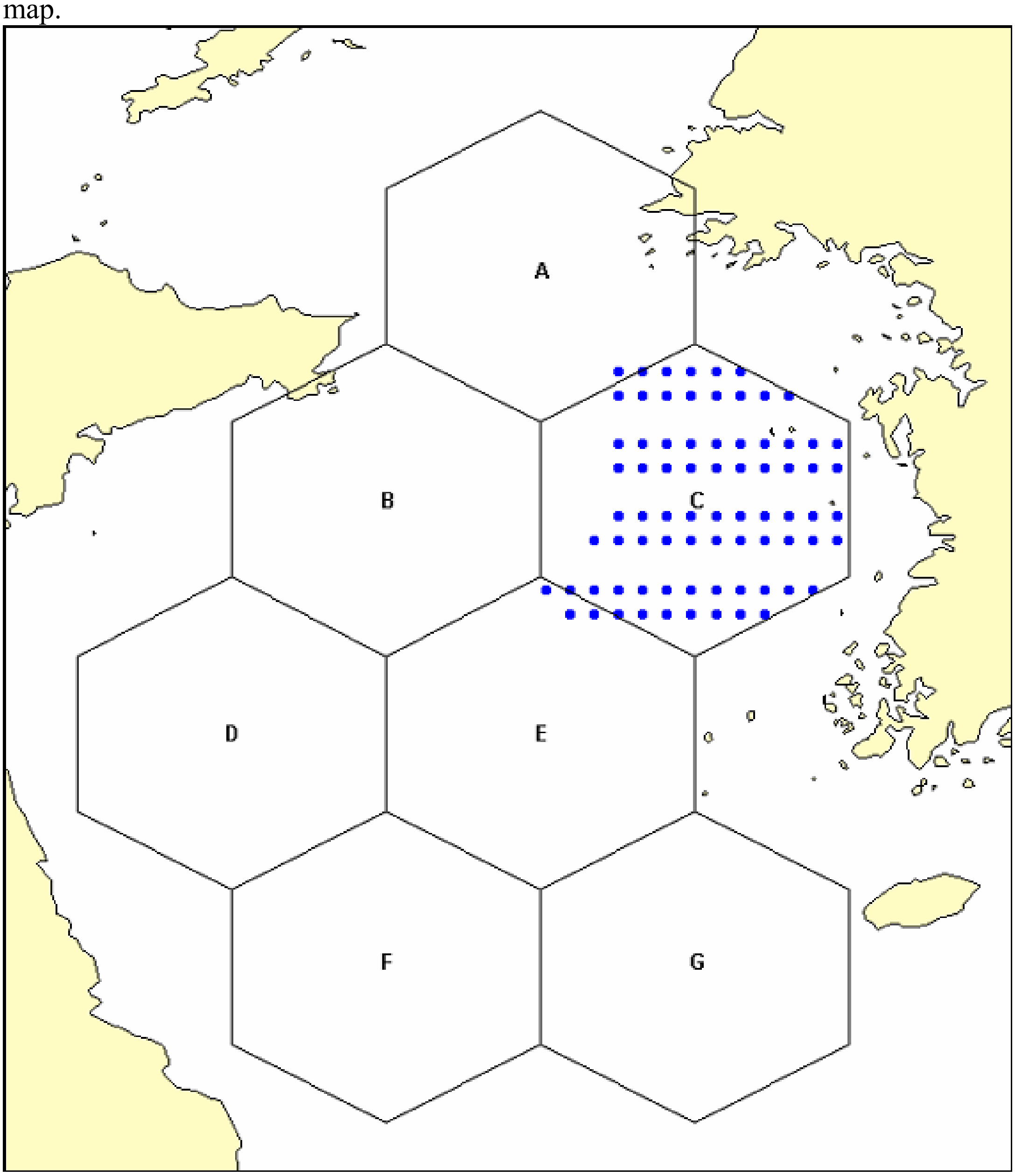
Seasonal variation

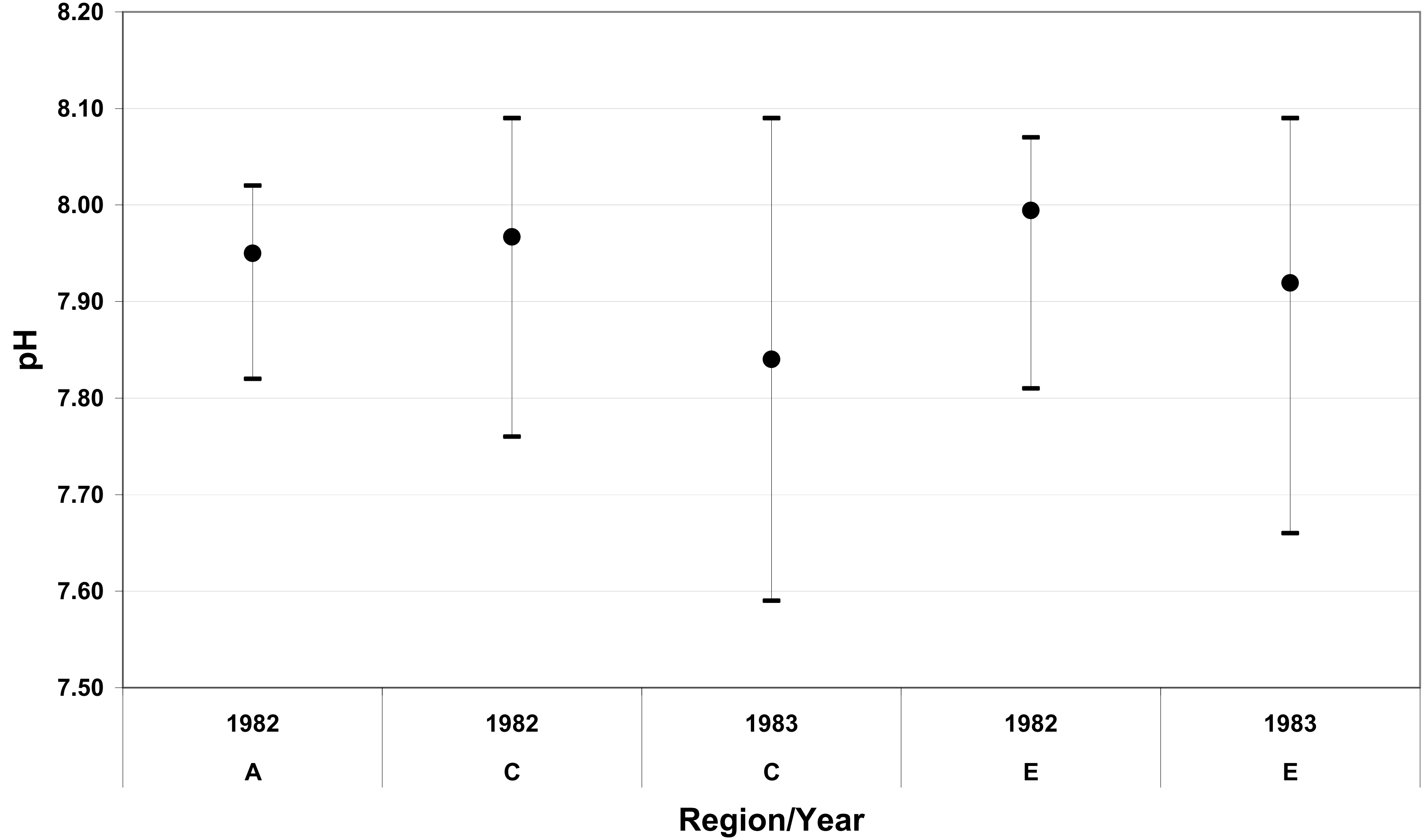


pH

pH is an important water quality parameter. The pH affects the solubility of minerals in water. Human activities including chemical spills, agricultural runoff, storm water runoff and sewage effluent can all affect the pH of water. The solubility of trace metals, some of which are toxic, are affected by changes in pH, generally becoming more soluble as the pH decreases. The buffering capacity of water, its ability to resist changes in pH, is critical to aquatic life. Aquatic organisms survival greatly diminishes as pH falls below 5 or increase above 9. To meet Florida state standards the pH of the water must be between 6.5 and 8.5 .

pH data points were collected mostly in the region C as indicated in the following map.



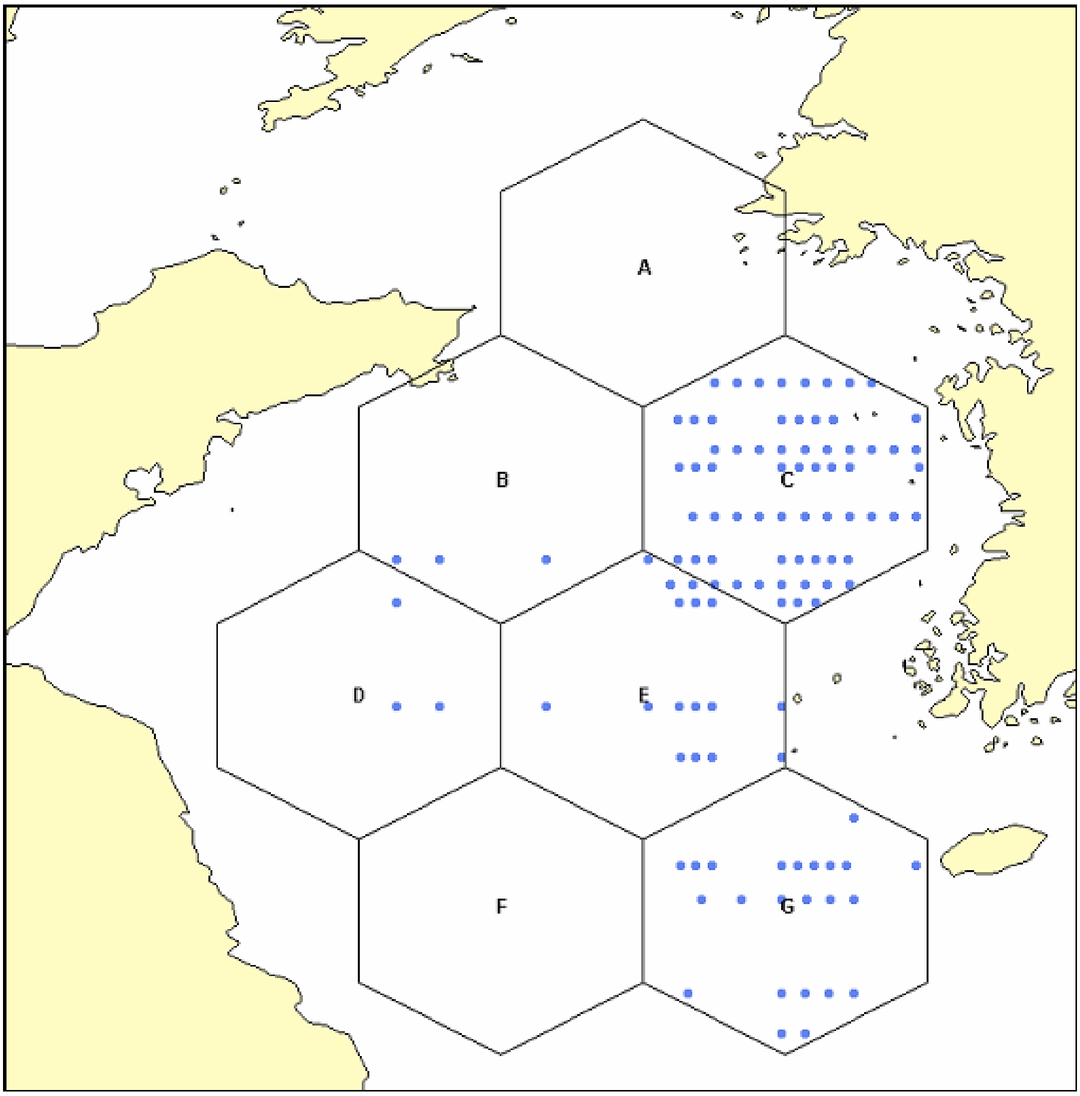


8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
pH
1982
A
1982
C
1983
C
1982
E
1983
E
Region/Year

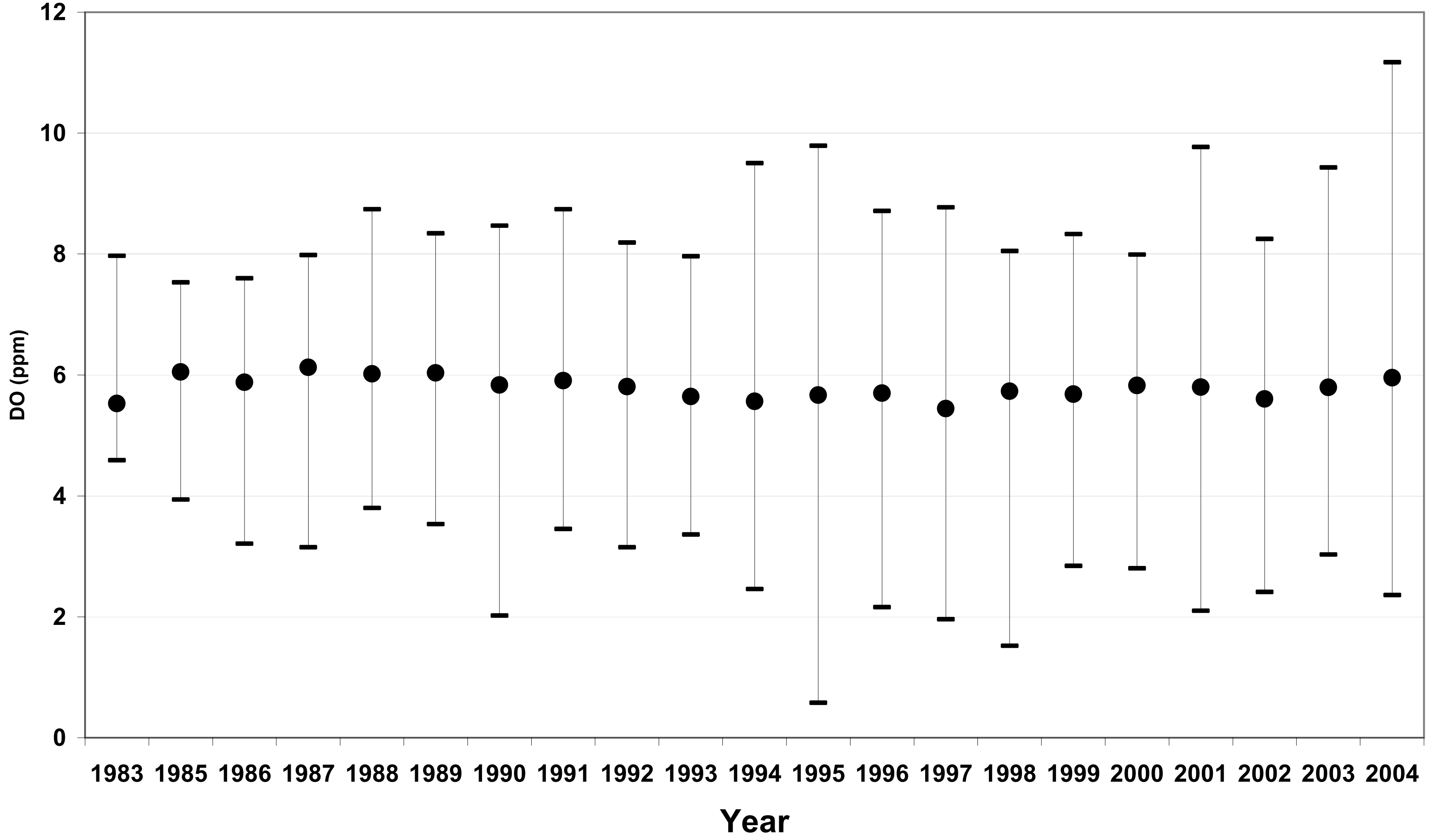
Dissolved Oxygen

Dissolved oxygen (DO) is essential for the survival of fish and other aquatic organisms. Oxygen dissolves in surface water due to the aerating action of winds. Oxygen is also introduced into the water as a by-product of aquatic plant photosynthesis. When dissolved oxygen becomes too low, fish and other aquatic organisms cannot survive. Measurement of DO is an indicator of eutrophication. Decrease dissolved oxygen can cause fish kills and death to other aquatic organisms. When the dissolved oxygen drops below 3 mg/L is when fish kills can occur.

Dissolved Oxygen was measured in the following stations:



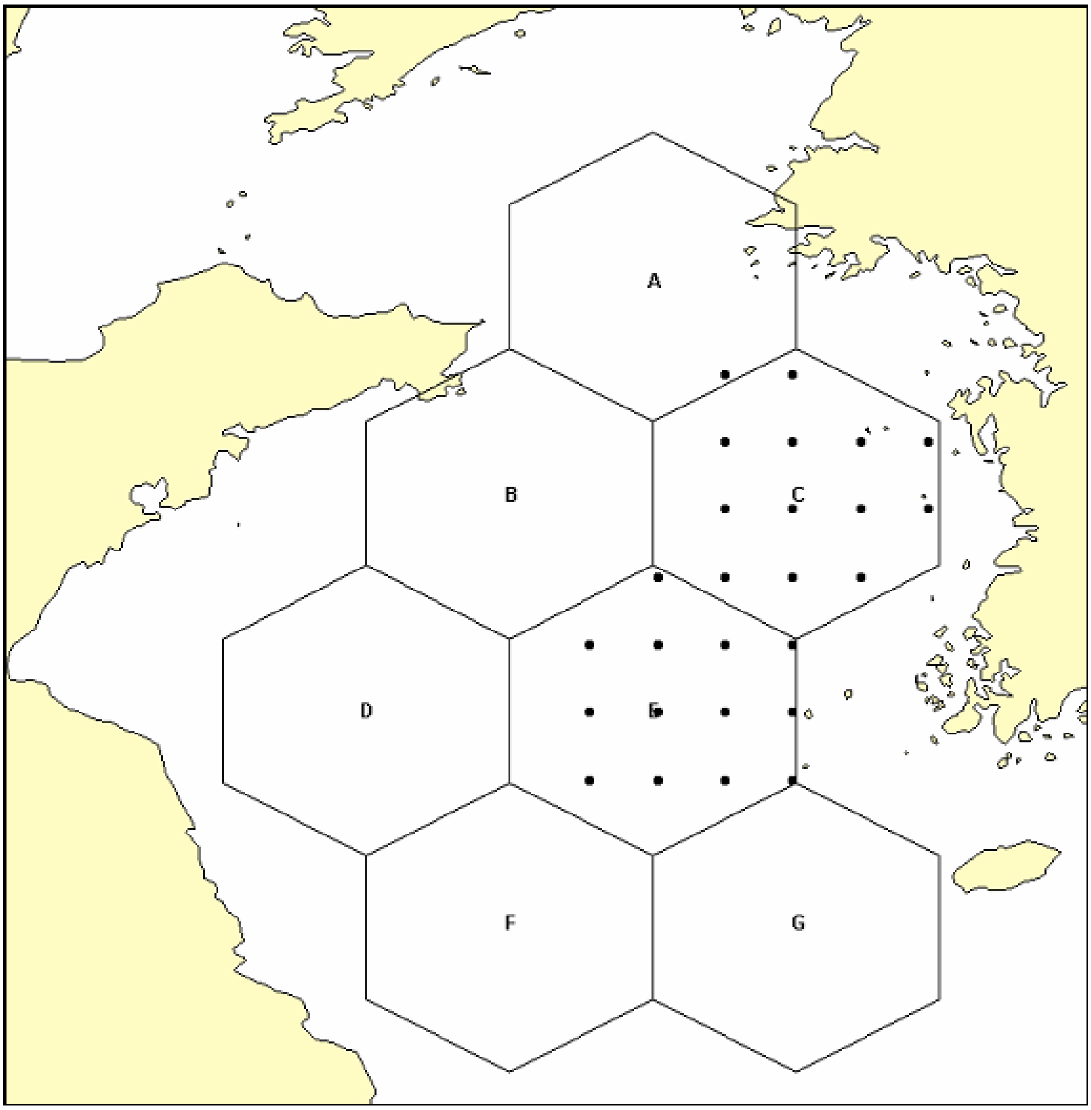
Though the overall (average) DO levels seem amicable for aquatic life, there were fluctuations below threshold levels that might have affected the biota. (see the figure below).



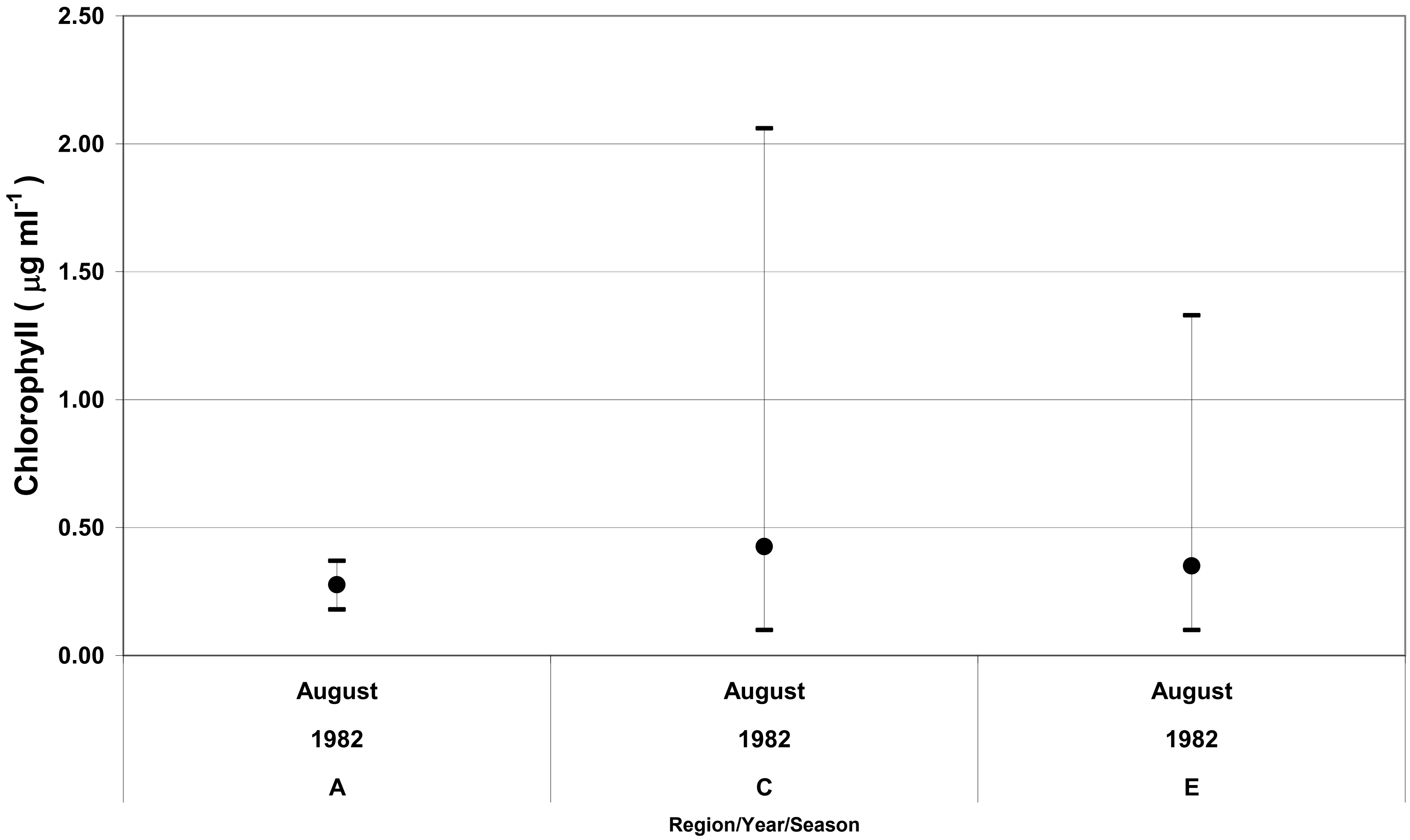
12
10
8
6
4
2
0
DO (ppm)
1983
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year

Chlorophyll-a

Chlorophyll a is an important biological indicator of water quality. Several factors affect chlorophyll content in sea water such as DO, nutrients, temperature etc. This parameter was measured at a few stations in region A, C and E as shown below:



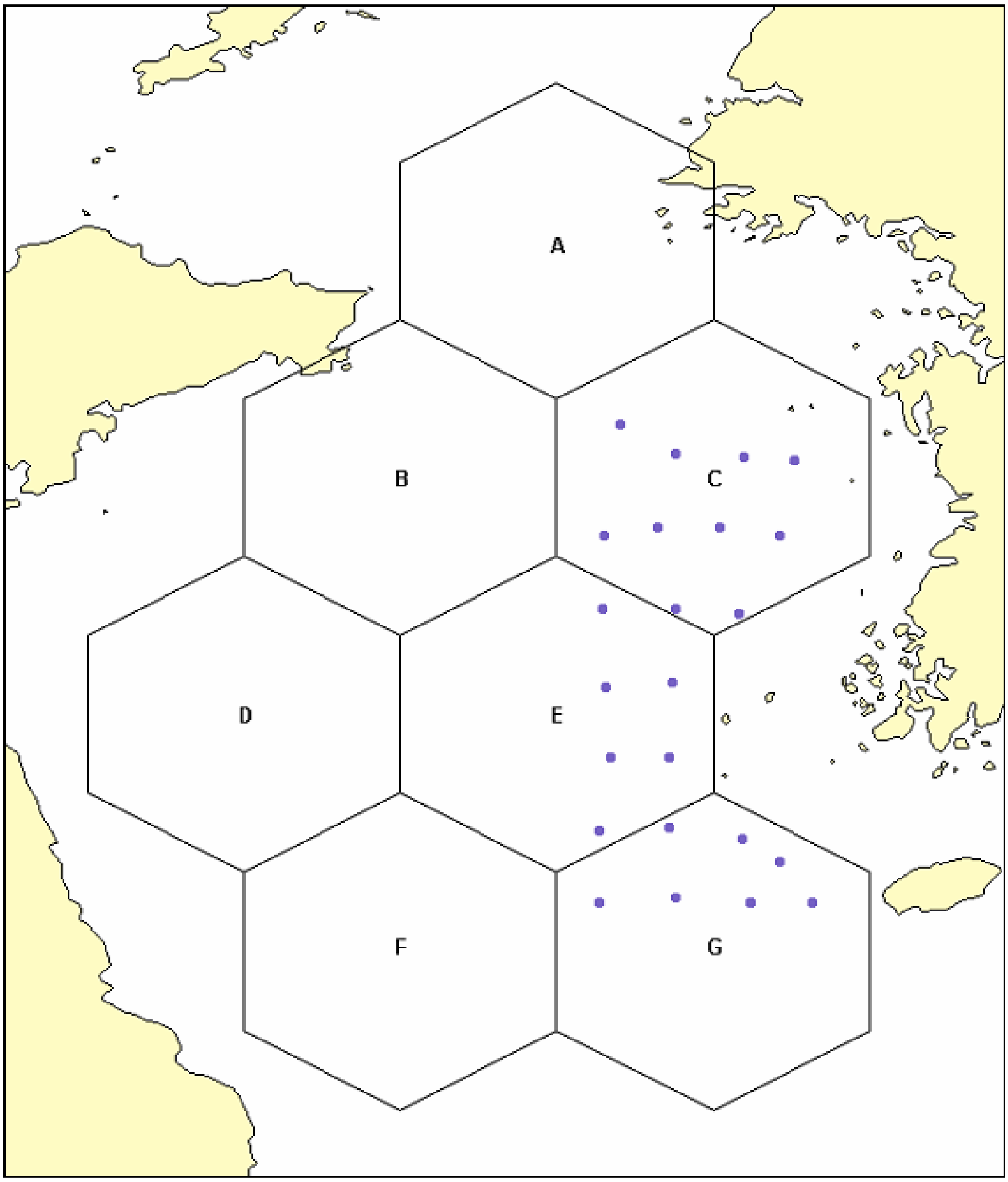
The following data show measurements in summer of 1982 in all three stations. While region A did not show much variation both C and E showed much variation.



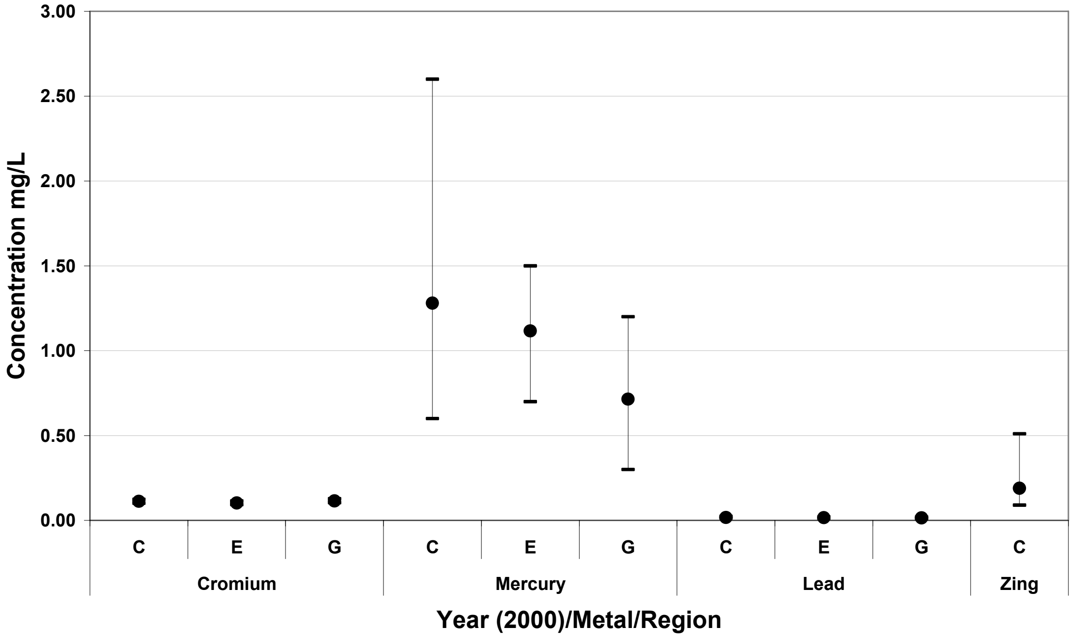
Chlorophyll (μg ml-1)
2.50
2.00
1.50
1.00
0.50
0.00
August
1982
A
August
1982
C
August
1982
E
Region/Year/Season

Heavy metals

Heavy metals such as Chromium, Zinc, Lead and Mercury were measured in regions C, E and G as shown below:

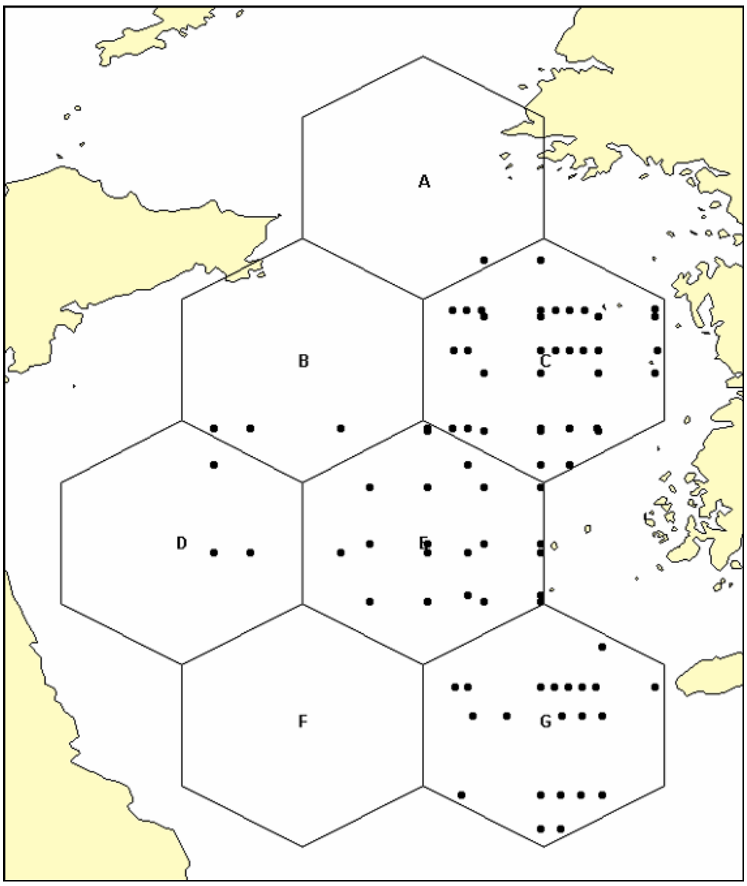


While levels of chromium, zinc and lead were below 0.05 mg/L, mercury showed elevated fluctuations in all the three regions, especially in region C as shown below



Nutrients:

Nutrients are essentials for plant growth and overall health of the ecosystem. When an abundance of nutrients are present in an aquatic system, for example, eutrophication occurs, rendering an unbalanced environment where algae and weed nuisances thrive and other aquatic organisms perish. In soils, nutrient levels have a direct effect on microbial activity. In the present report levels of Silicate, Phosphate, Nitrite and Nitrate were measured. In the following stations…

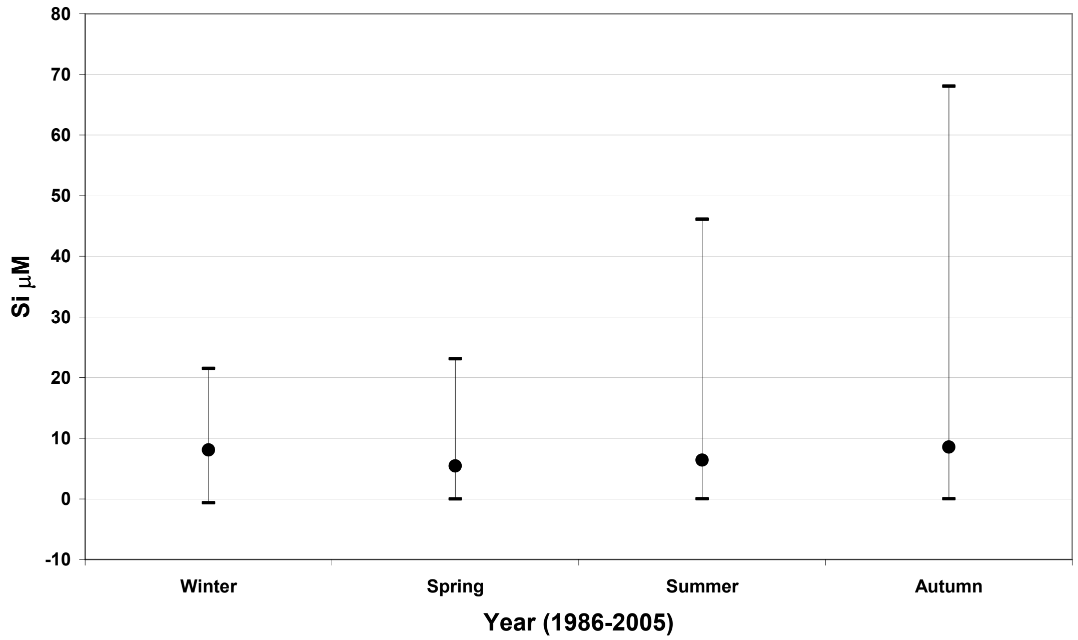


Silicate:

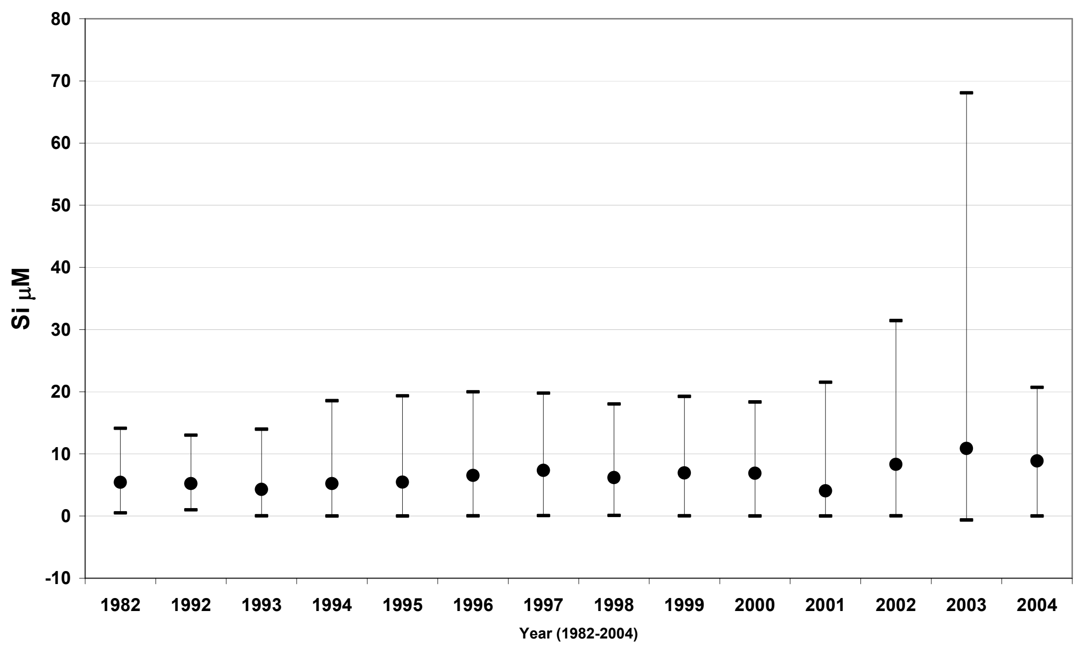
The biogeochemistry of Si in the marine environment is of global significance. The behavior of this element can be used as proxy to understand the carbon cycle in the ocean, which drives the biological pump in the water column and affects the sequestration of atmospheric CO2. It is indicated that riverine budget of dissolved silicate in certain catchments of world has been dramatically modified due to either natural climate change and/ or anthropogenic perturbations, which subsequently has a detrimental influence on the ecosystem (e.g. structure and function) of coastal ocean.

A detailed investigation on the status of silicate in yellow sea is presented below:

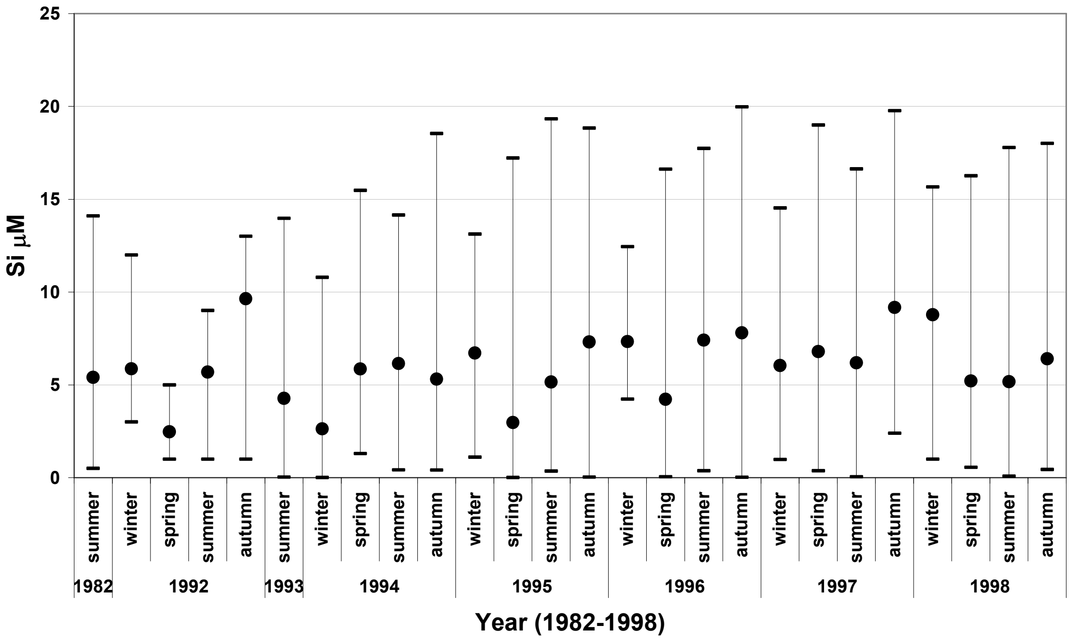
Silicate levels in 1986-2005



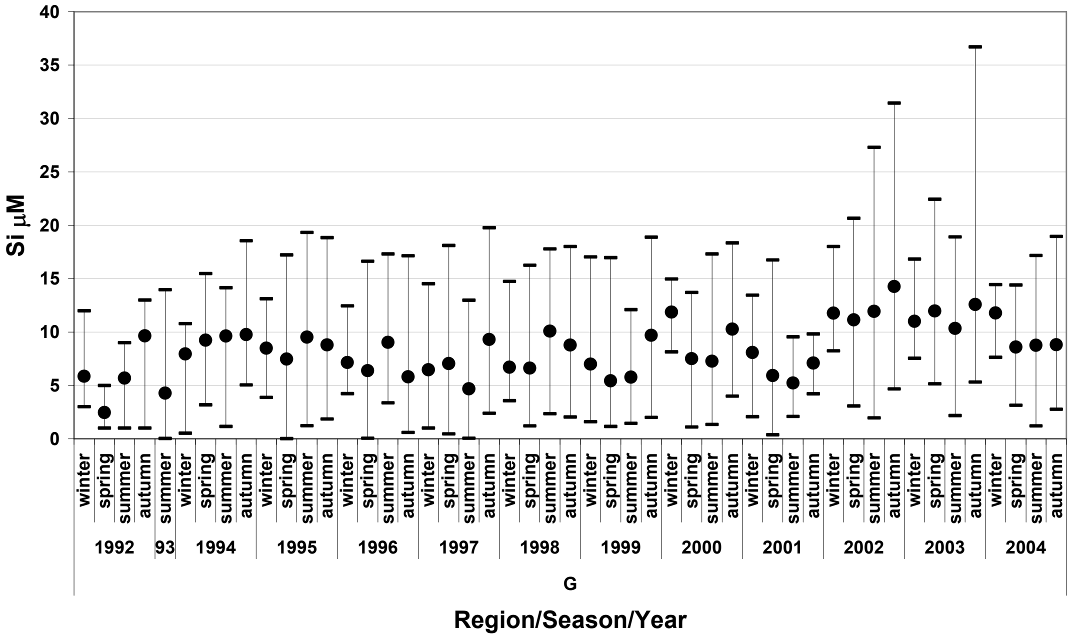
Silicate in 1982-2004



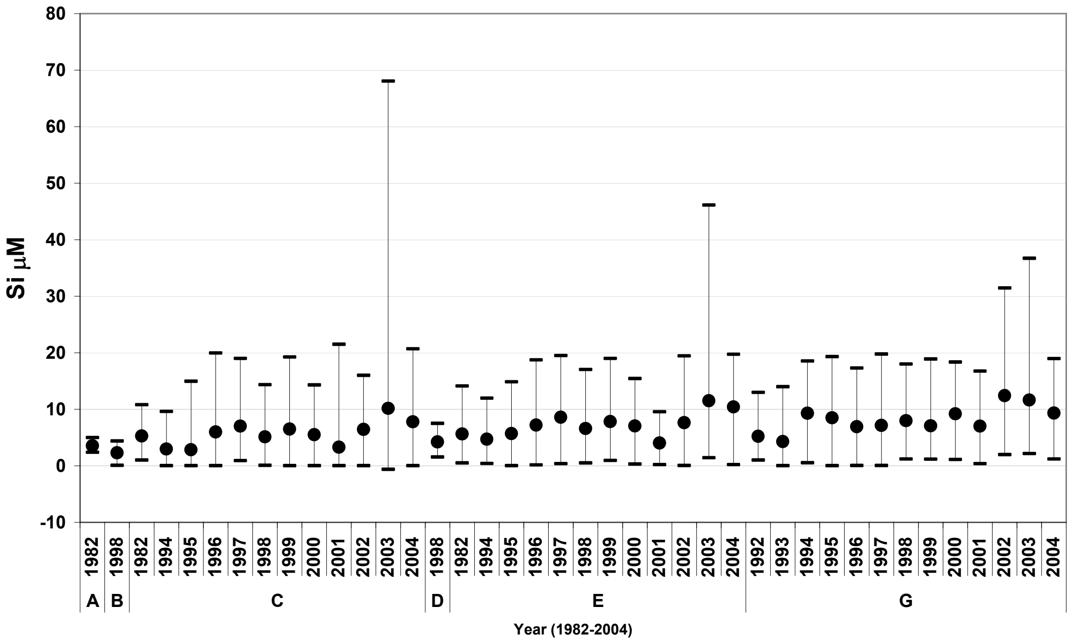
Seasonal variations during 1982-1998



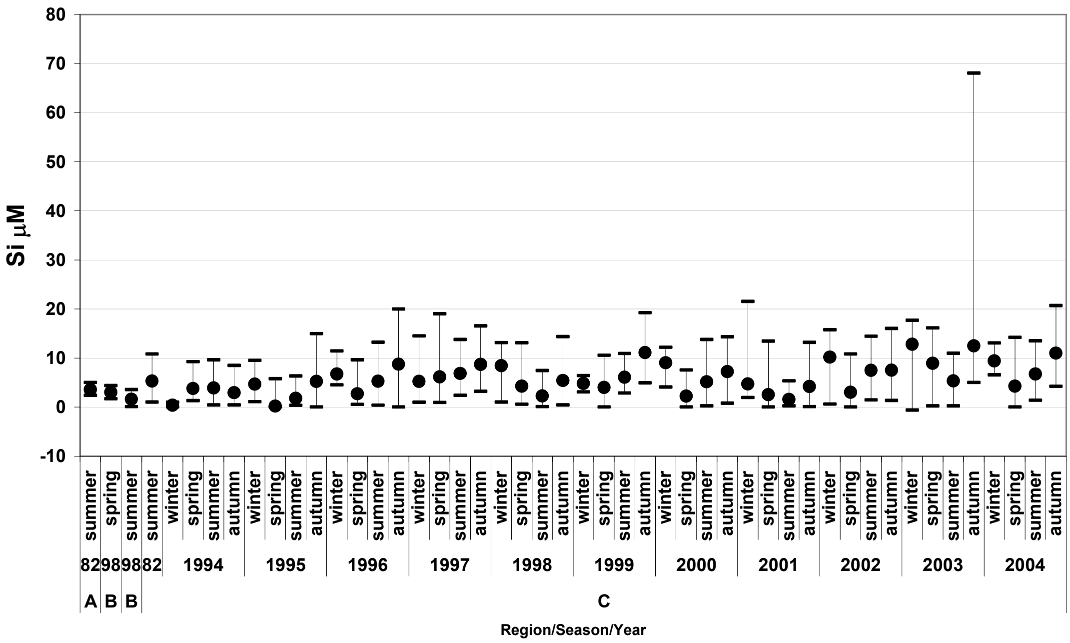
Seasonal variations during 1999-2004



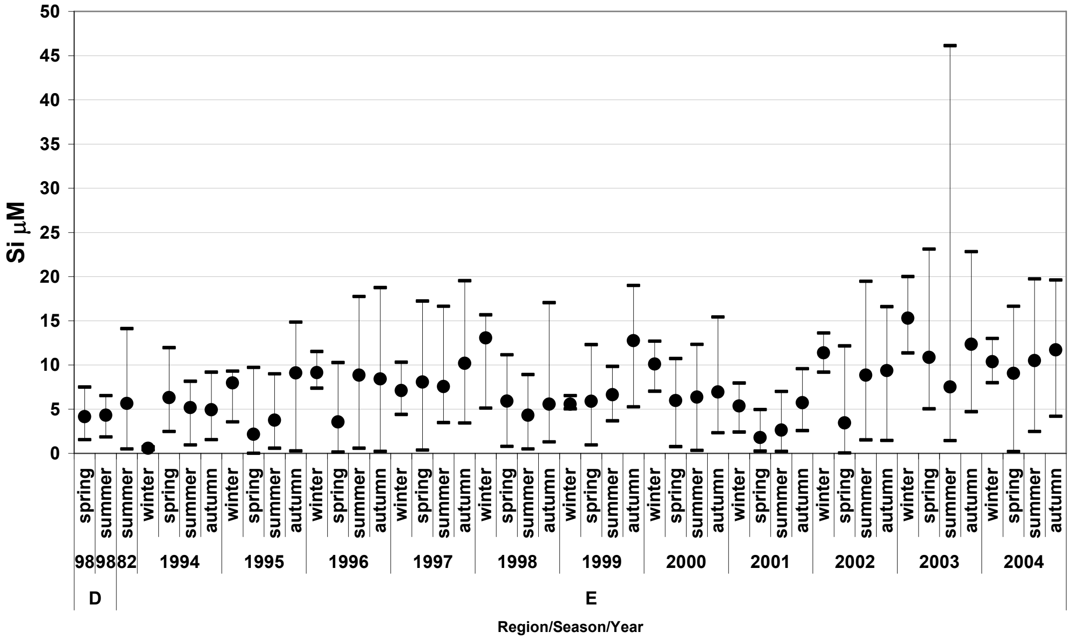
Regional variation in Silicate



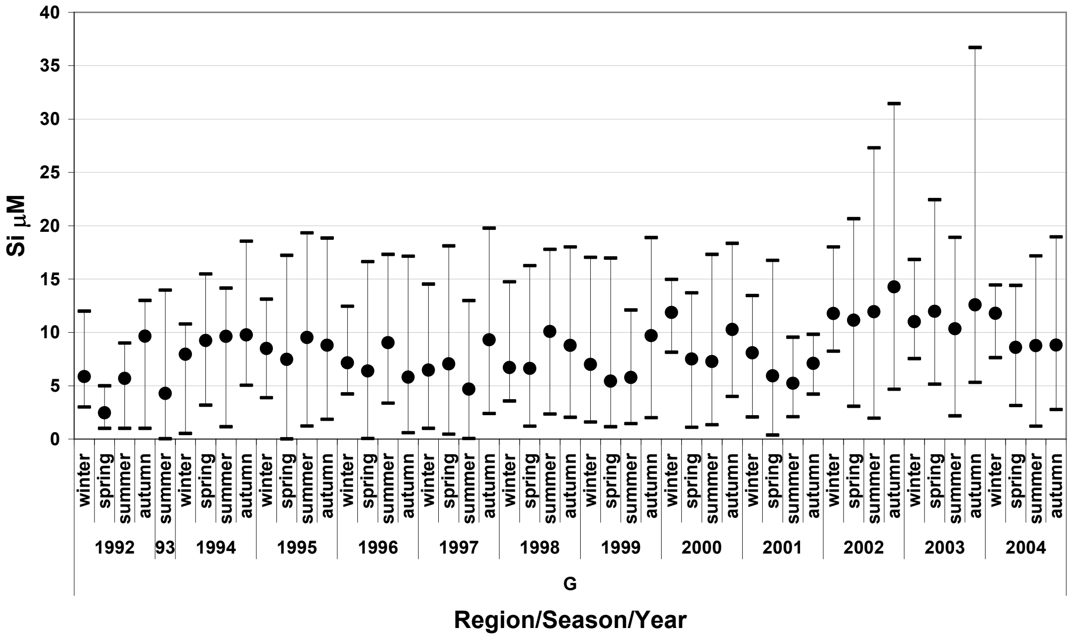
Regional and Seasonal variation in Silicate levels (1)



Regional and Seasonal variation in Silicate levels (2)



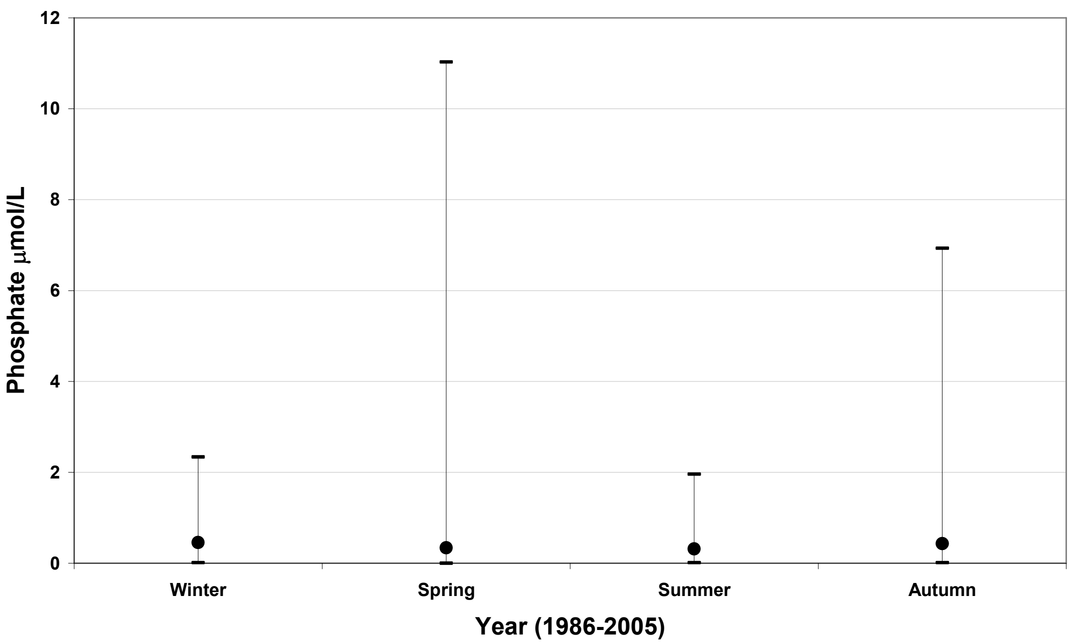
Regional and Seasonal variation in Silicate levels (3)



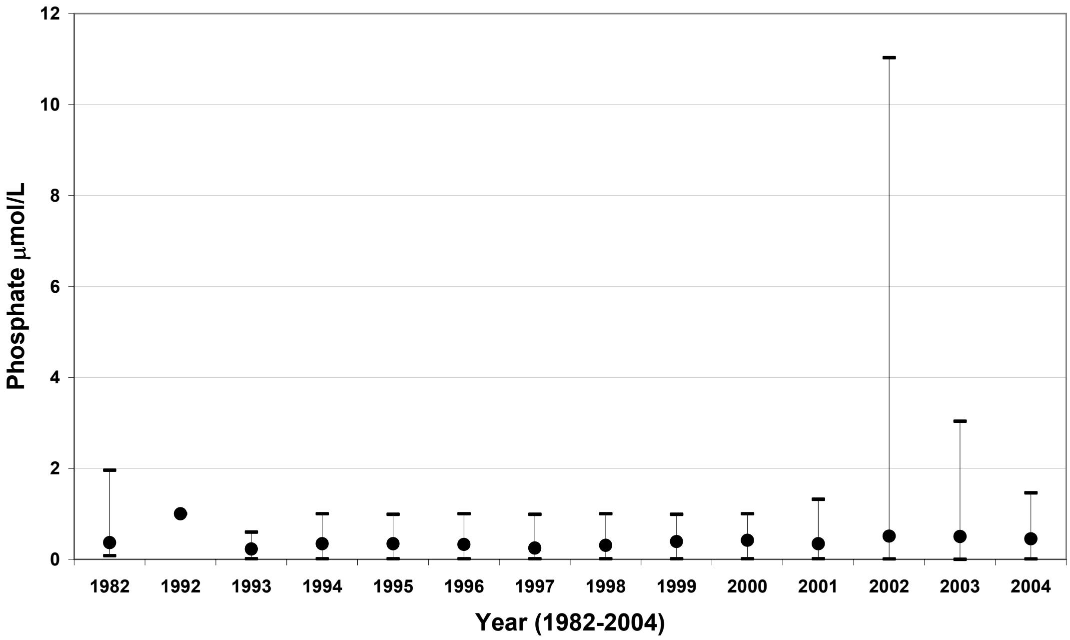
PHOSPHATES

Phosphates are the inorganic forms of phosphorus compounds. Phosphorus is a mineral that is essential to life. Like nitrogen, it is one of the chief ingredients in commercial fertilizer. Unlike carbon and nitrogen, for which the reservoir is the atmosphere, phosphorus has a reservoir in rocks. Phosphate rocks are formed by the slow process of marine sedimentation. Phosphate in the rocks are dissolved by mining and erosion and are used by plants. Animals acquire phosphorus by eating plants, and phosphates are released from organics forms by phosphatizing bacteria. Animal also release phosphates by excretion. One result of the release of phosphates from rocks has been a startling increase in algae populations, for which phosphorus had previously been the principle limiting resource in many ponds and streams. The proliferation of algae, in turn, has led to other major changes in the ecology of our fresh water.

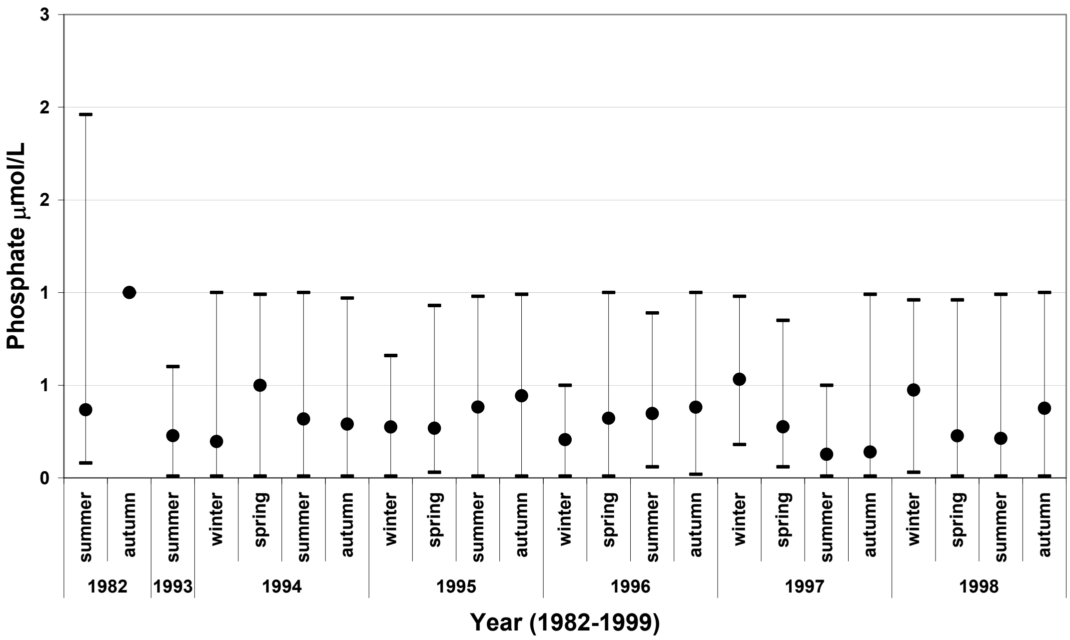
Levels of Phosphate in 1986-2005



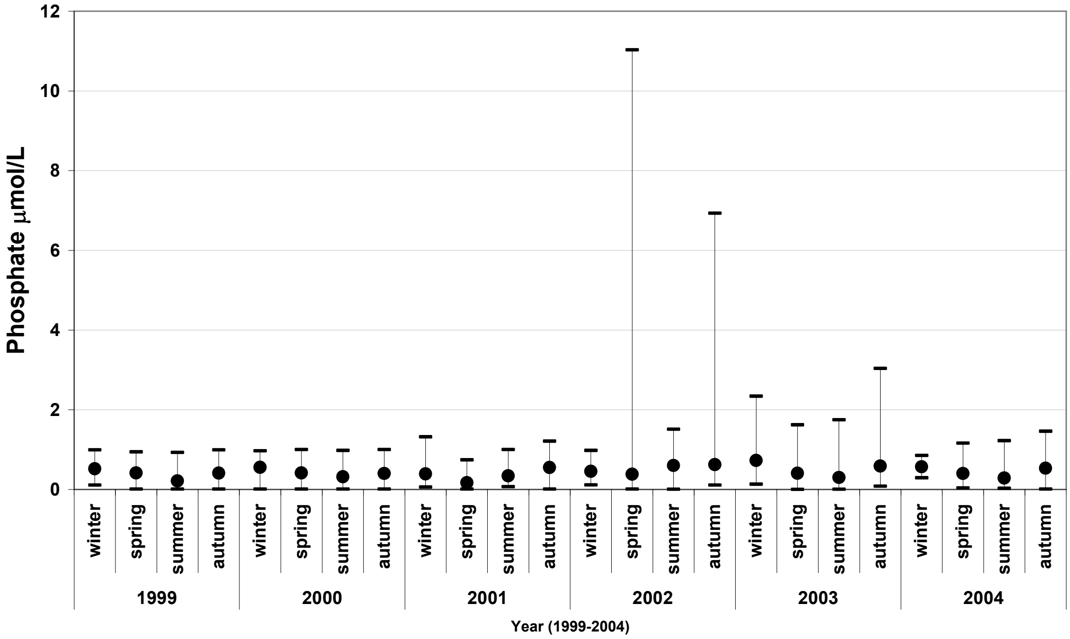
Yearly variations in 1982-2004



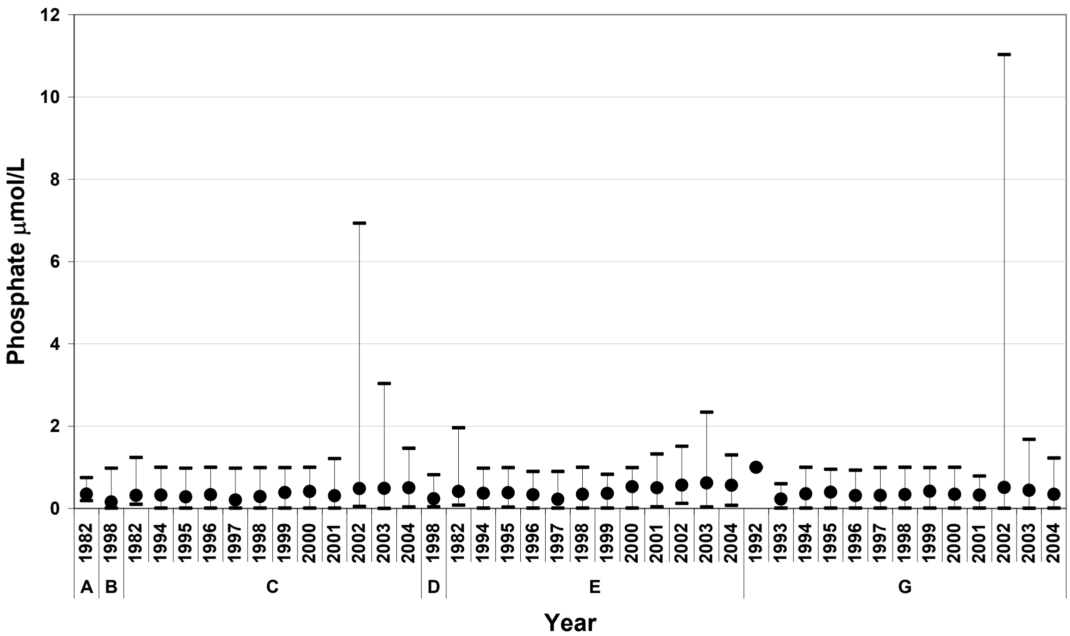
Seasonal variation in 1982-1998



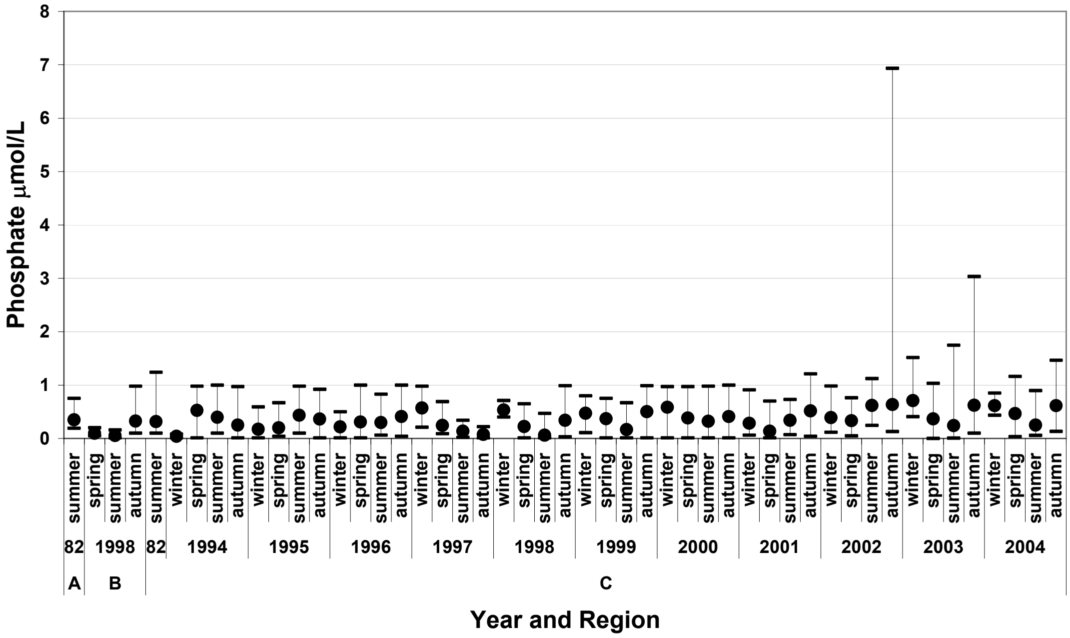
Seasonal variation in 1999-2004



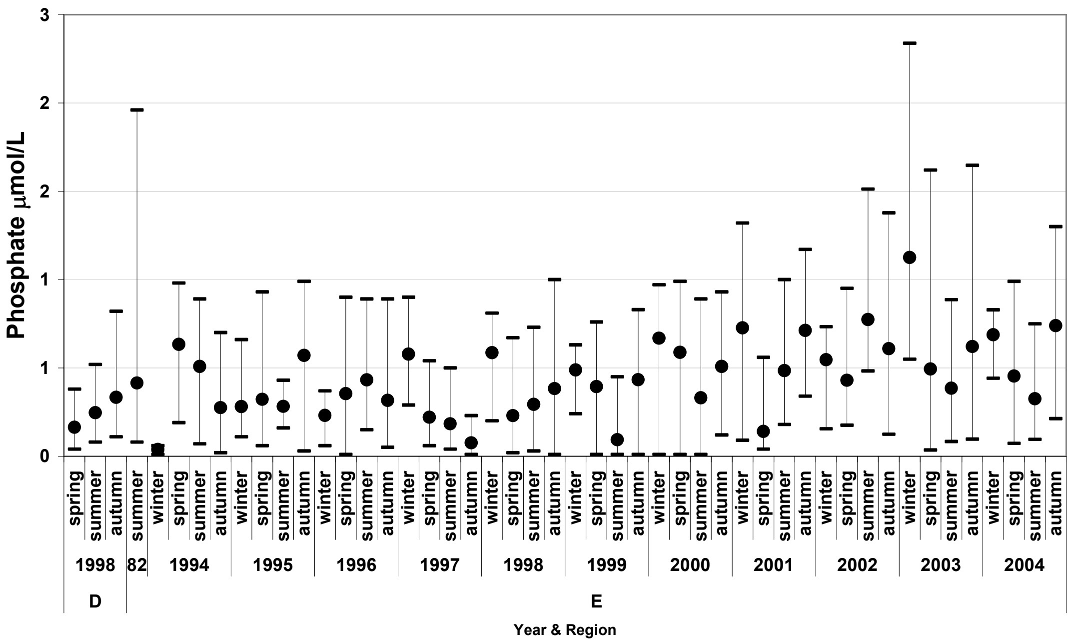
Regional variation in Phosphate levels



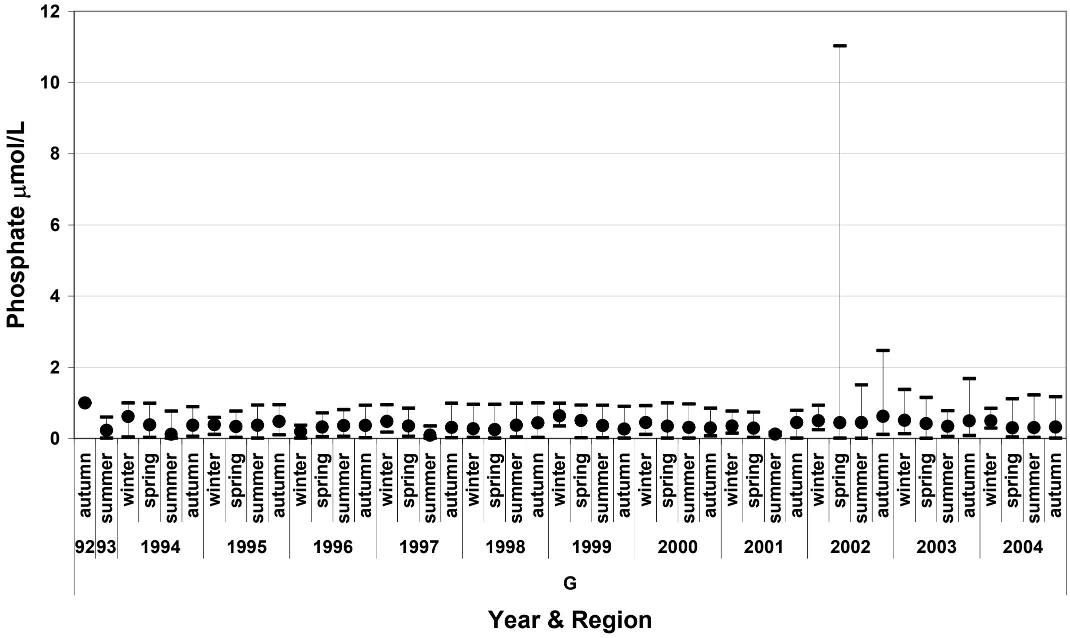
Seasonal variants in different regions (1)



Seasonal variants in different regions (2)



Seasonal variants in different regions (3)



NITRATES AND NITRITES

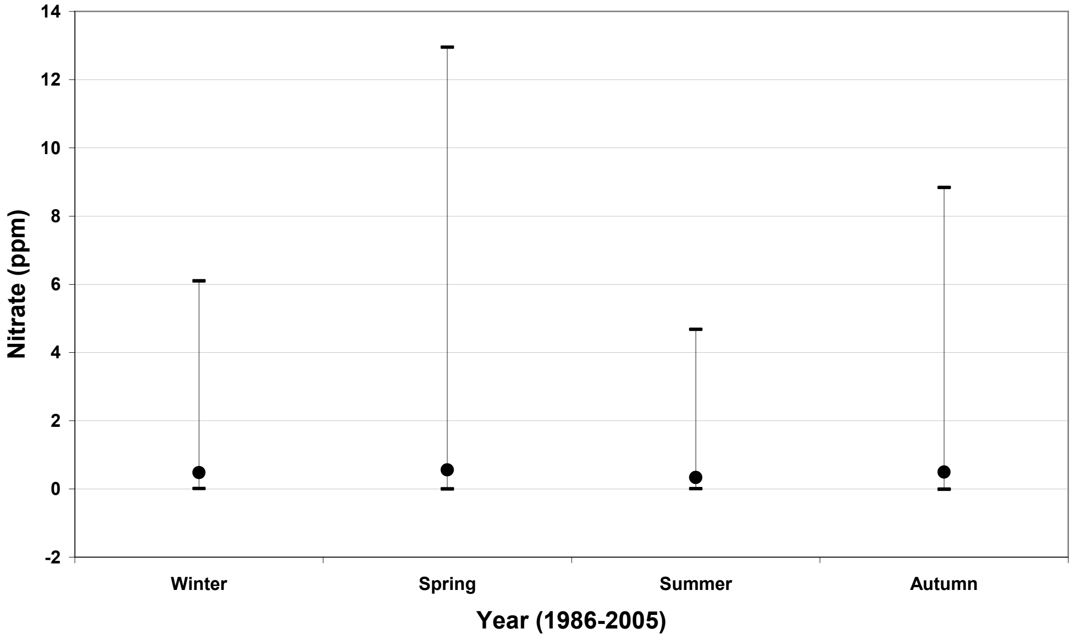
Nitrate is a major ingredient in farm fertilizer. When it rains, varying amounts of this chemical wash from farm land into nearby waterways. The nitrates stimulate the growth of plankton and water weeds which provide food for fish. This may cause an increase in the fish population. However, if algae grow too wildly, oxygen levels in the water will be reduced and fish will die. Nitrates commonly get into waterways from lawn fertilizer run-off, leaking septic tanks and cesspools, manure from farm livestock, animal wastes (including fish and birds) and discharges from car exhausts.

In nature, they are generally formed by the action of bacteria on ammonia and on compounds which contain nitrogen. Nitrites are relatively short-lived because they're quickly converted to nitrates by bacteria. However ... nitrites produce a serious illness in fish even though they don't exist for very long in the environment.

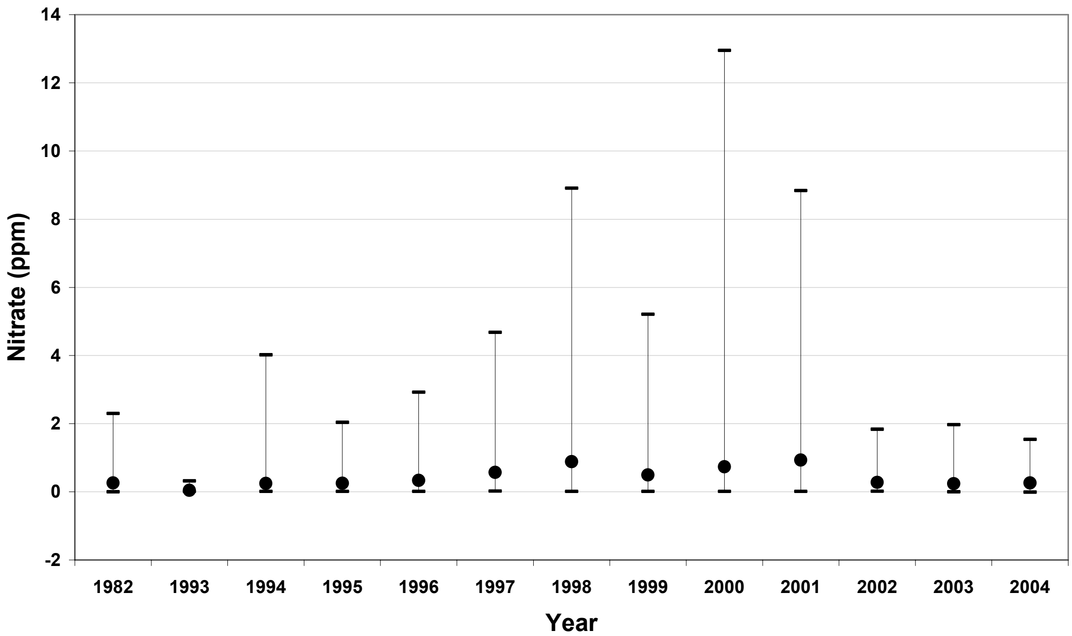
Nitrate-nitrogen levels below 90 mg/L and nitrite levels below 0. 5 mg/L seem to have no effect on warm-water fish. But salmon and other cold- water fish are more sensitive.

A detailed study on Nitrate in Yellow Sea is given below:

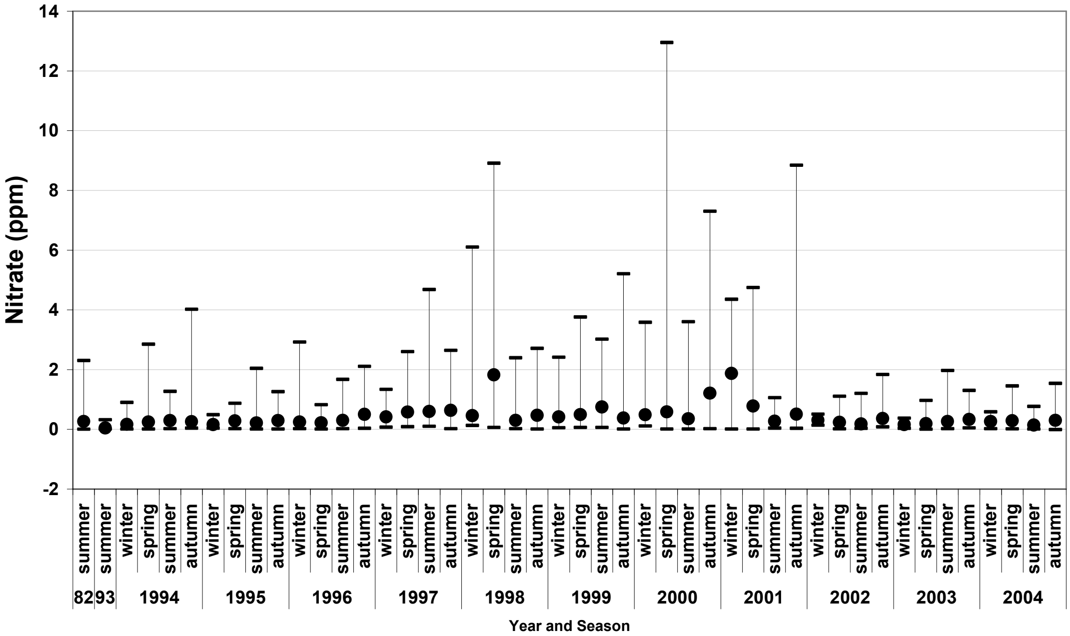
Nitrate levels in Yellow Sea (1986-2005)



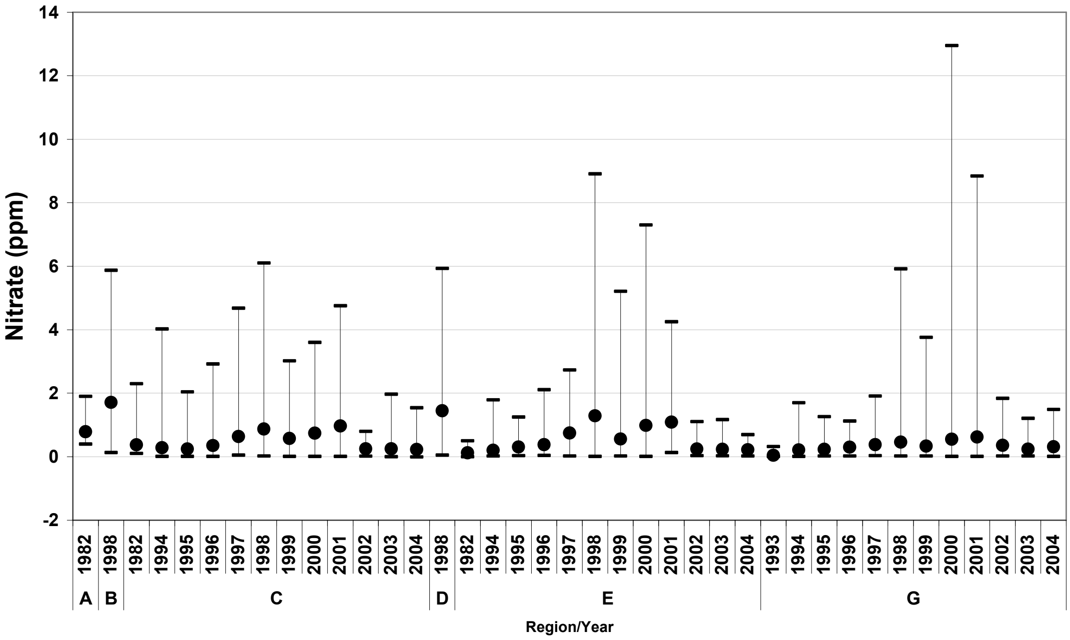
Annual variation in Nitrate levels



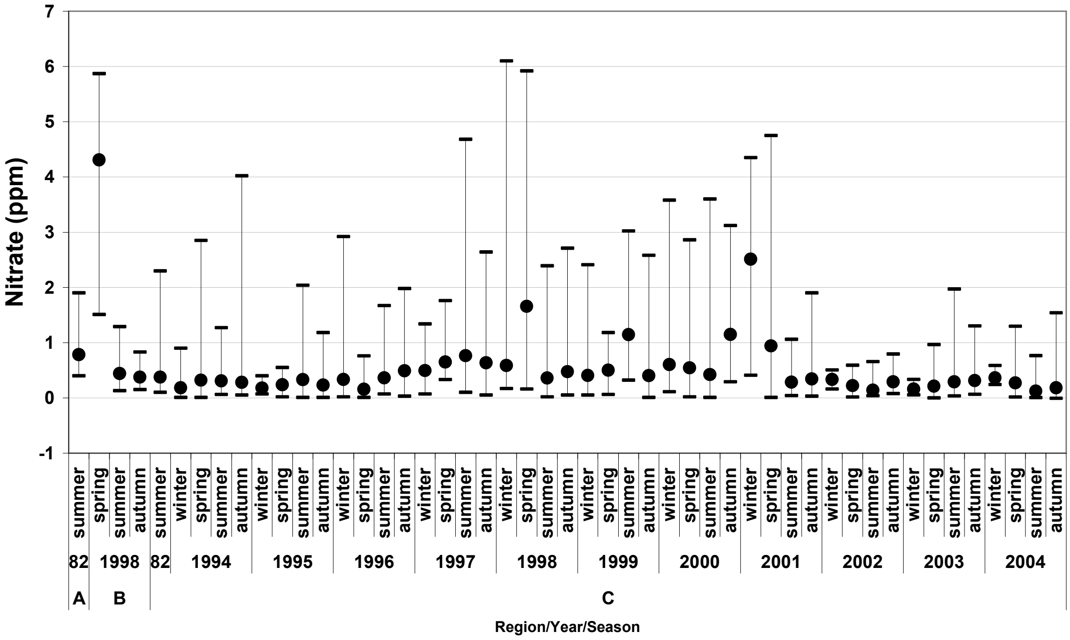
Seasonal variation over 1982 to 2004 period



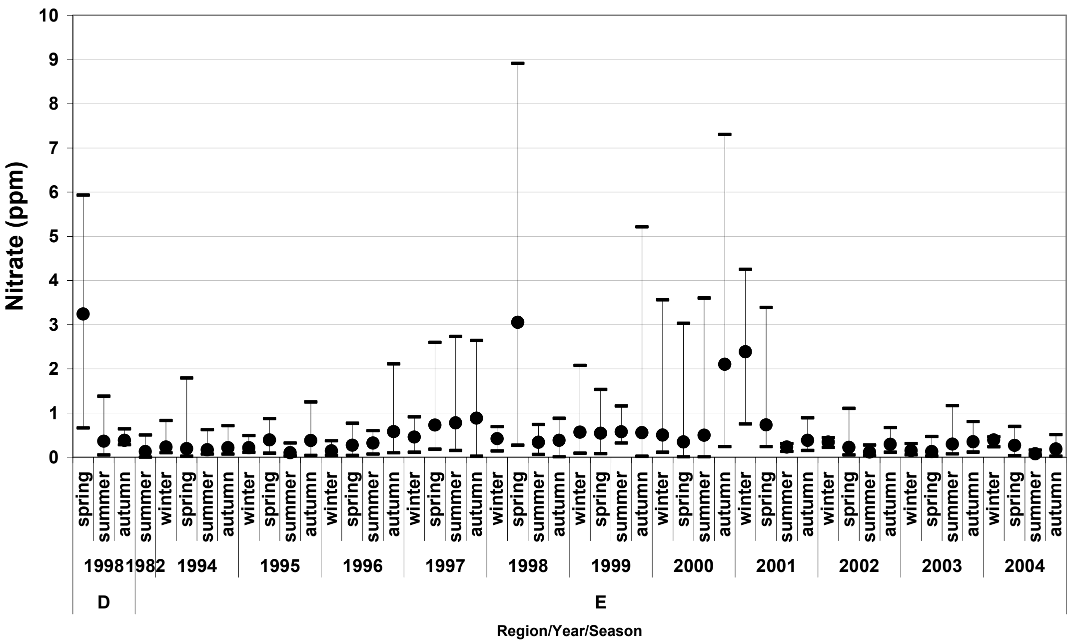
Annual variations in different regions



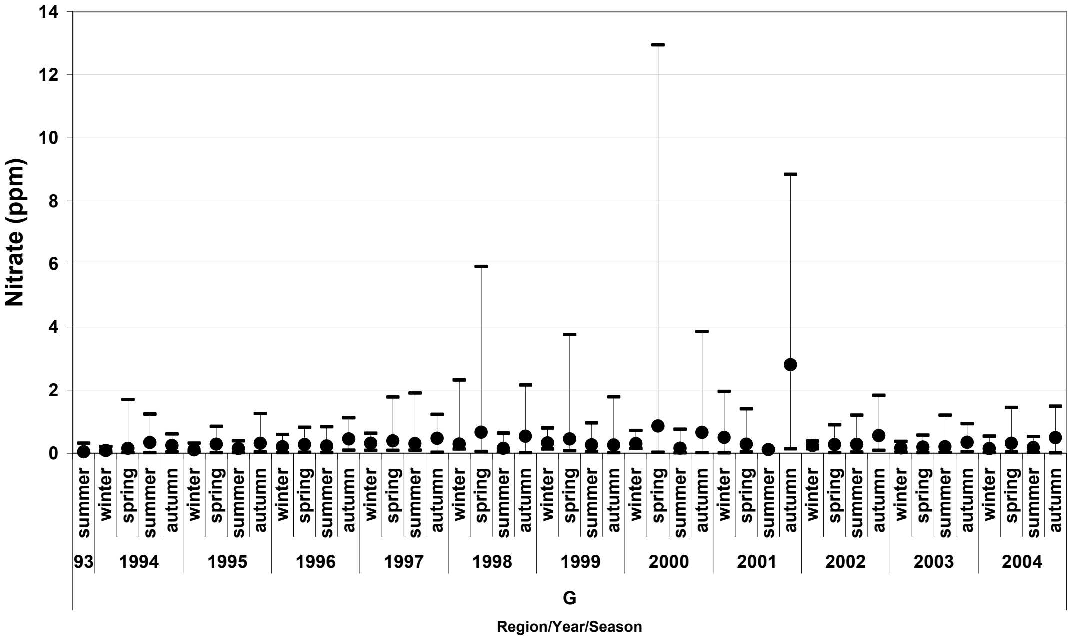
Nitrate levels in various regions on a seasonal basis (1)



Nitrate levels in various regions on a seasonal basis (2)



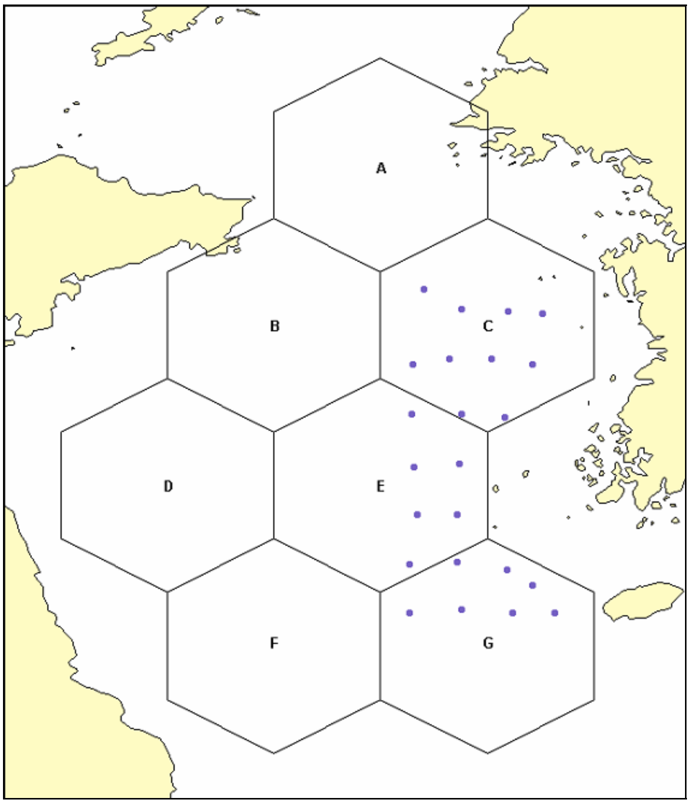
Nitrate levels in various regions on a seasonal basis (3)



II SEDIMENT

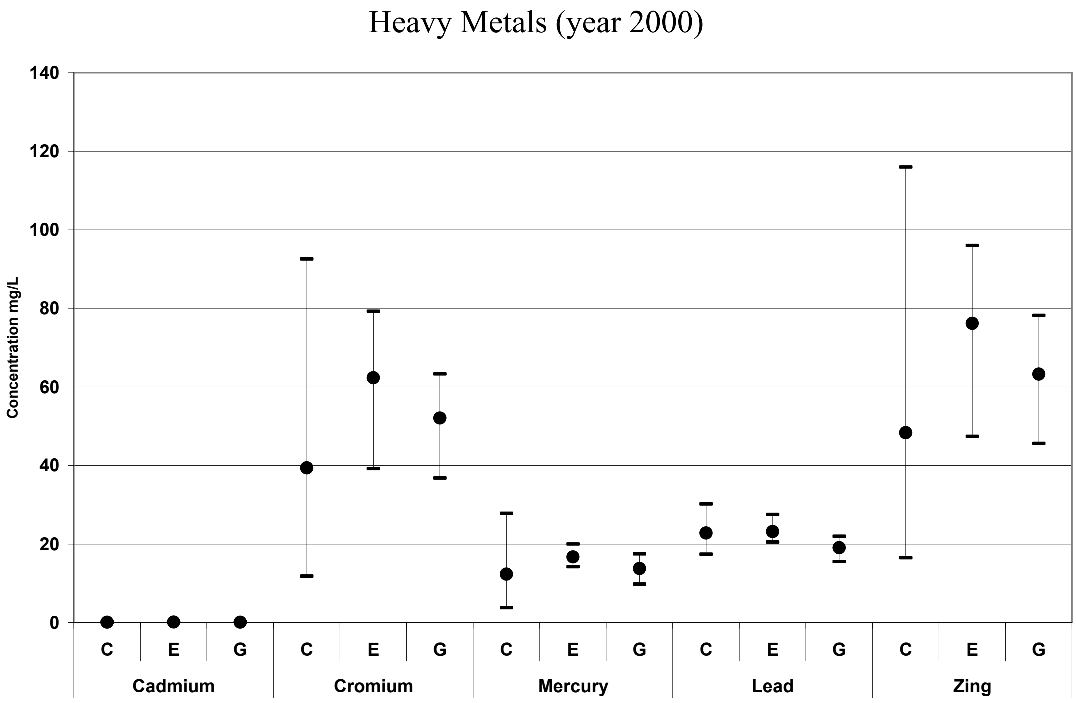
Heavy metals in sediments

Heavy metals in sediments were monitored in the following stations as shown below:



Heavy metals are contained in four reservoirs in an aquatic environment, namely, the surface water, the pore waters, the suspended sediment, and the bottom sediment.

Metal concentrations in surface waters can fluctuate by several orders of magnitude over short time intervals depending on the conditions . Heavy metals in aquatic systems tend to accumulate in bottom sediments and can be released by various processes of remobilization. The concentrations in sediments do not fluctuate to the same degree as in surface waters . Thus sediments of aquatic systems are usually studied when studying the quality of a water system. The most mobile fraction of the sediment is that of the < 63 µm grain size. This fraction also contains proportionately more sorbed metal/gm of sediment due to its larger surface area. While both bioavailable and total concentrations of metals are typically studied, recently there has been more focus on bioavailable metal forms because these are the ones that have the greatest environmental impact.



While cadmium, mercury and lead showed least variations, chromium and zinc showed larger variations.

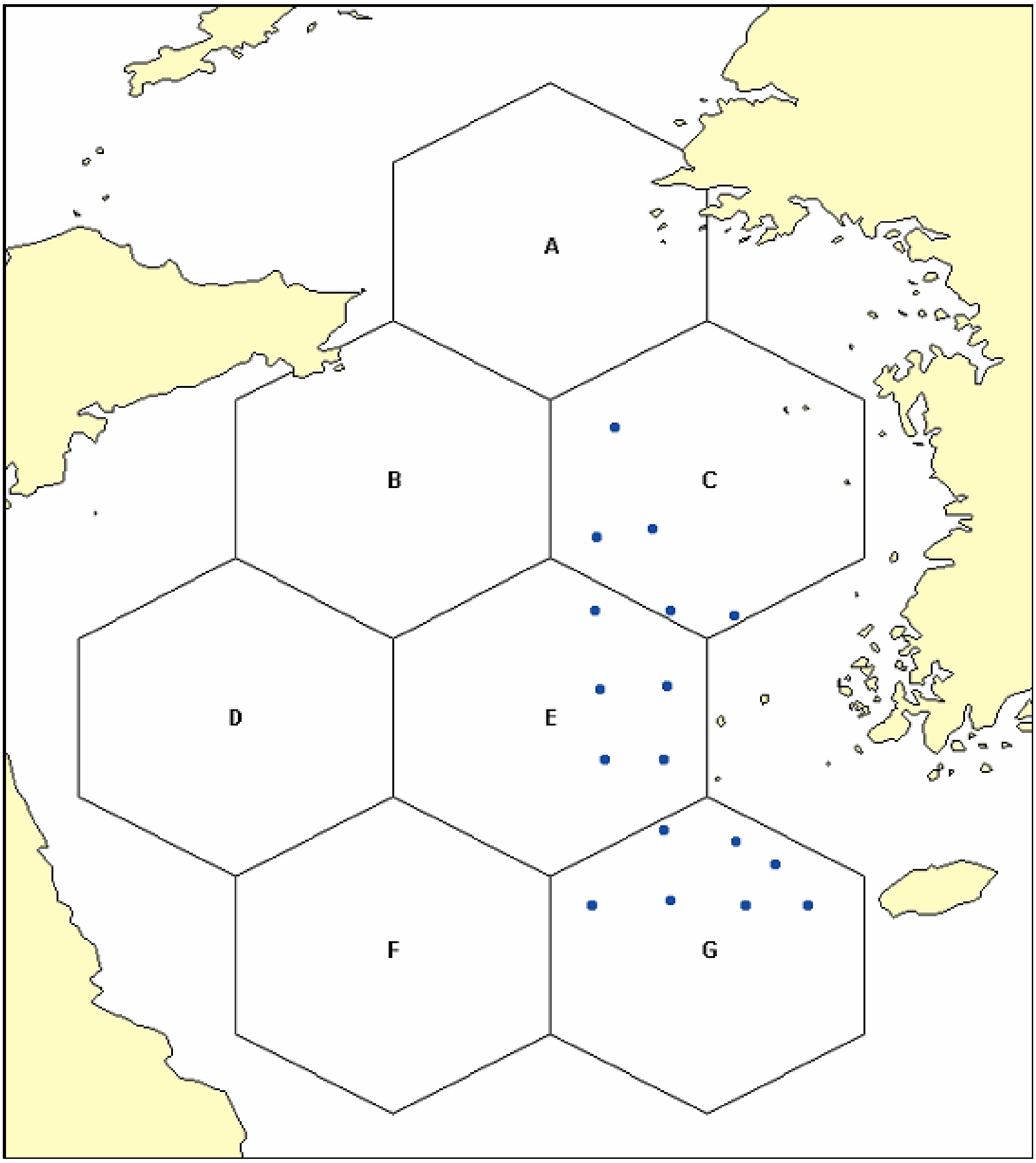
III. BIOTA

Lead, Mercury, and Cadmium are hazardous metals in the Baltic marine environment. Because of their large impact by rivers and the atmosphere, their toxic effects on the ecosystem and their complex biogeochemical behavior, it was recommended to monitor these contaminants isochronous.

The enrichment of metals in biota is dependent on their bioavailability. In this context it is useful to differentiate between dissolved and particle bounded (volume related) metal species as also implemented by OSPAR in the North Sea.

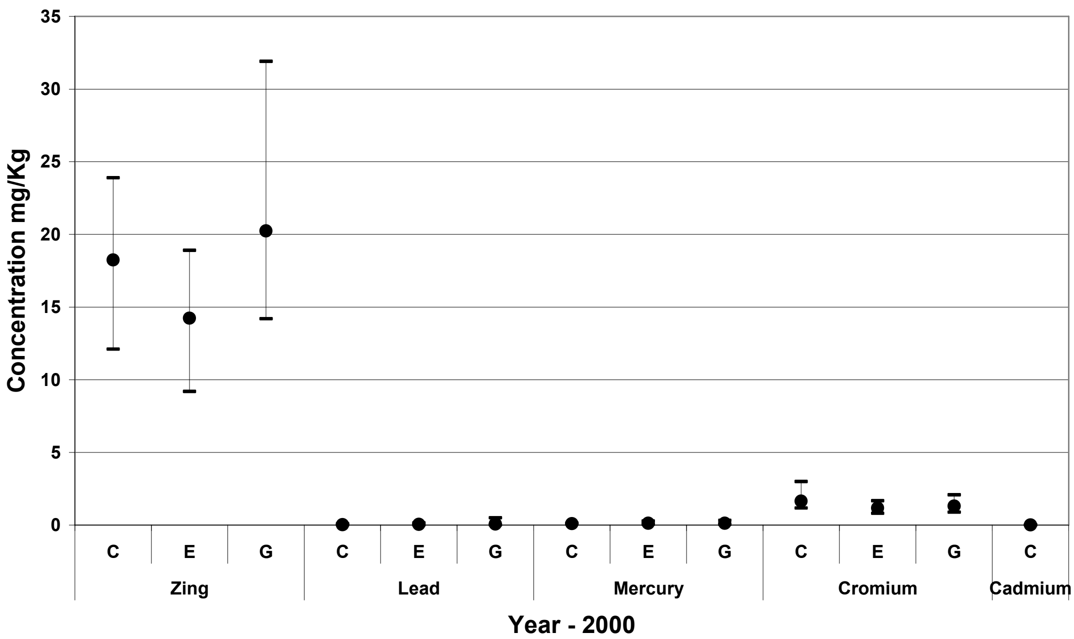
To study the development of trace metal trends in the water column and to establish comparable time series, it was recommended to perform the sampling of these contaminants once a year in wintertime (February), when the biological activities are limited.

The biota samples for this study came essentially from three regions, viz. C,E and G as shown below.



The result of this study is given below.

Heavy metals in Biota (Year 2000)



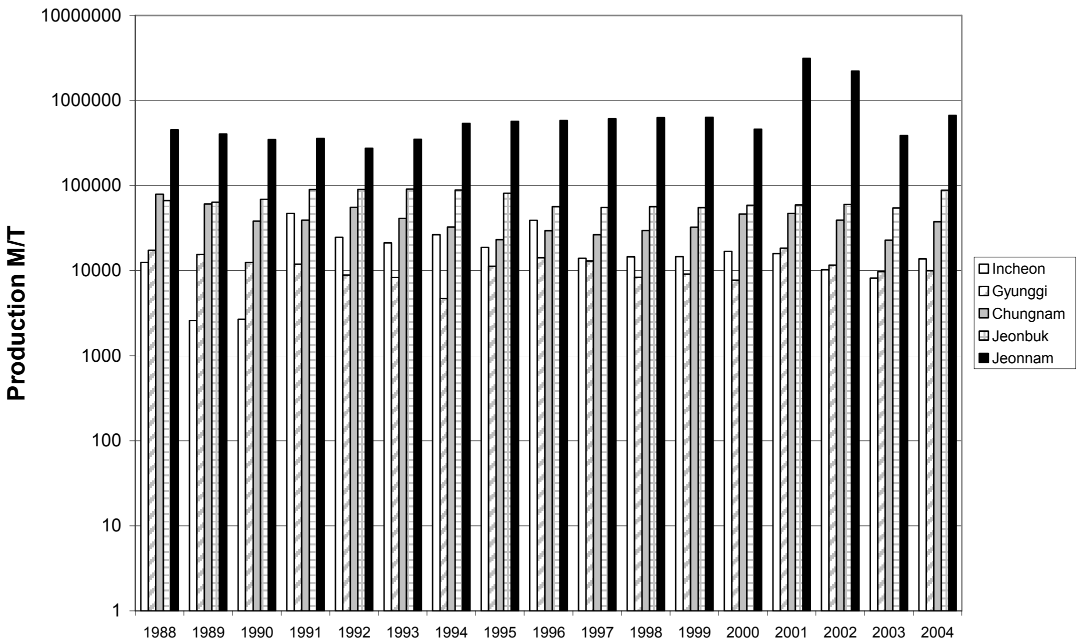
The levels of lead, mercury, chromium and cadmium are minimum or non-detectable but for zinc that showed bioaccumulation.

IV. FISHING

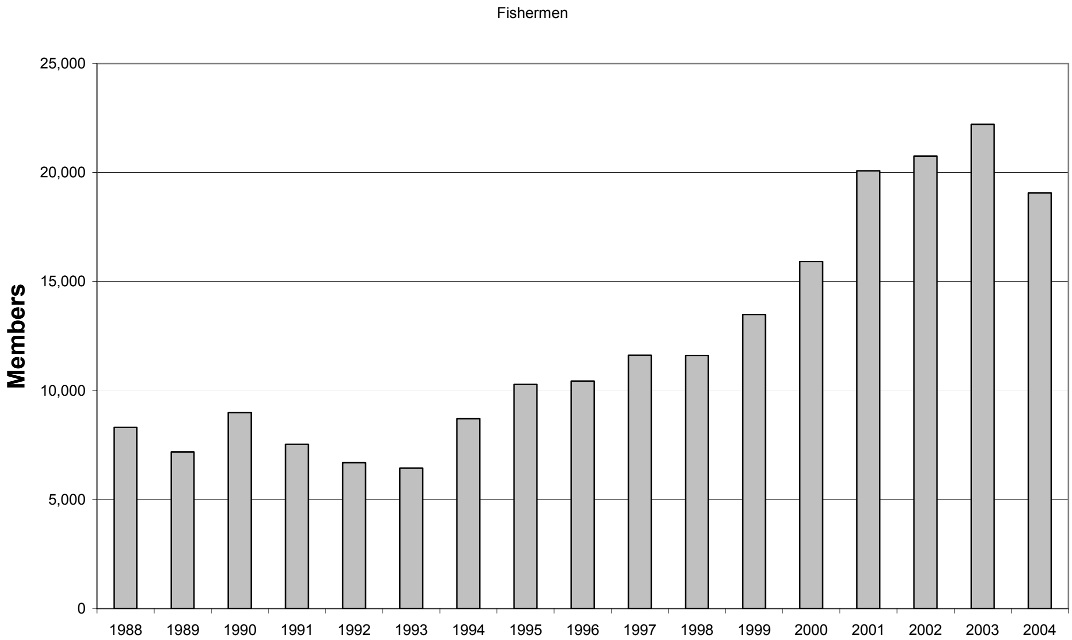
Korea is a fishing country. Fishing is done in various ways from harvesting the sea to aquaculture in farms. Sustainable fishing is an essential aspect ecosystem maintenance. Yellow Sea LME is considered a Class I, highly productive (>300 gC/m2-yr) ecosystem based on SeaWiFS global primary productivity estimates. The Yellow Sea has marked seasonal variations and supports both cold temperate species (eel-pout, cod, flatfish, Pacific herring) and warm water species (skates, gurnard, jewfish, small yellow croaker, spotted sardine, fleshy prawn, southern rough shrimp). It includes mammal species such as whales, fin-less porpoise, seals, and sea cow lions.

However, this resource is threatened by over fishing. This LME was once one of the most intensively exploited in the world (see Tang, 1989). Today, the major fisheries are at an extremely low level (the average total catch is 200,000 tons) compared with 3 decades ago. They are no longer economically sustainable. GIWA characterizes the LME as severely impacted in terms of over fishing, with destructive fishing practices. A fisheries recovery plan requires the cooperative effort of all countries bordering the LME.

The following graph shows the fish catch in Metric Tons. Jeonnam prefecture has the highest productivity in comparison to Incheon, Gyunggi, Chungnam and Jeonbuk prefectures.

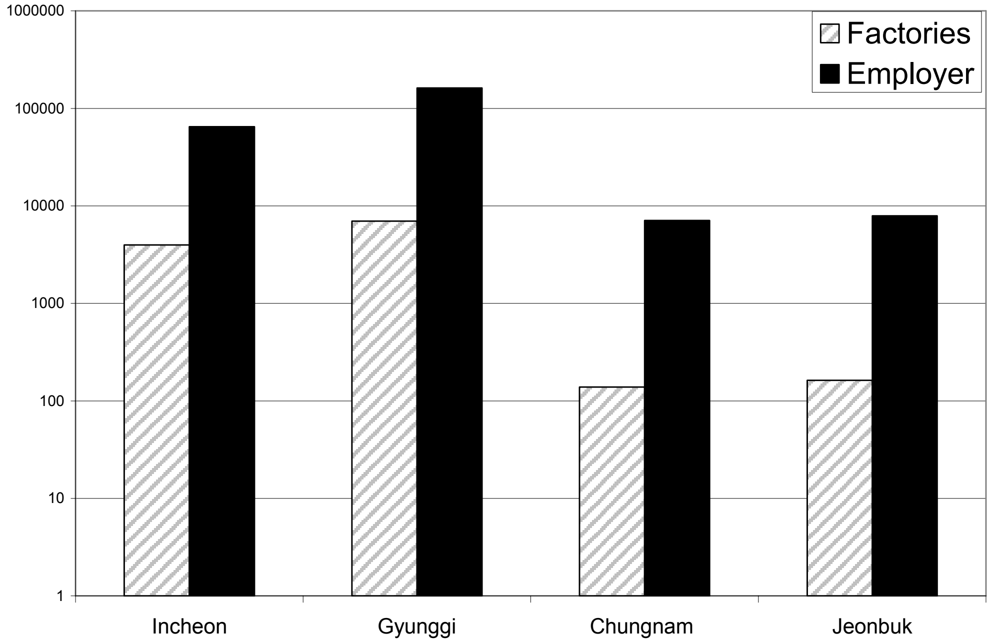


In spite of declining yield and enthusiasm for fishing in the yellow sea, fishing activity has grown in Korea since 1988 and peaked in the year 2003. However, it started showing a declining trend there after. This is observable from the following graph.



V: DEVELOPMENTAL ACTIVITIES

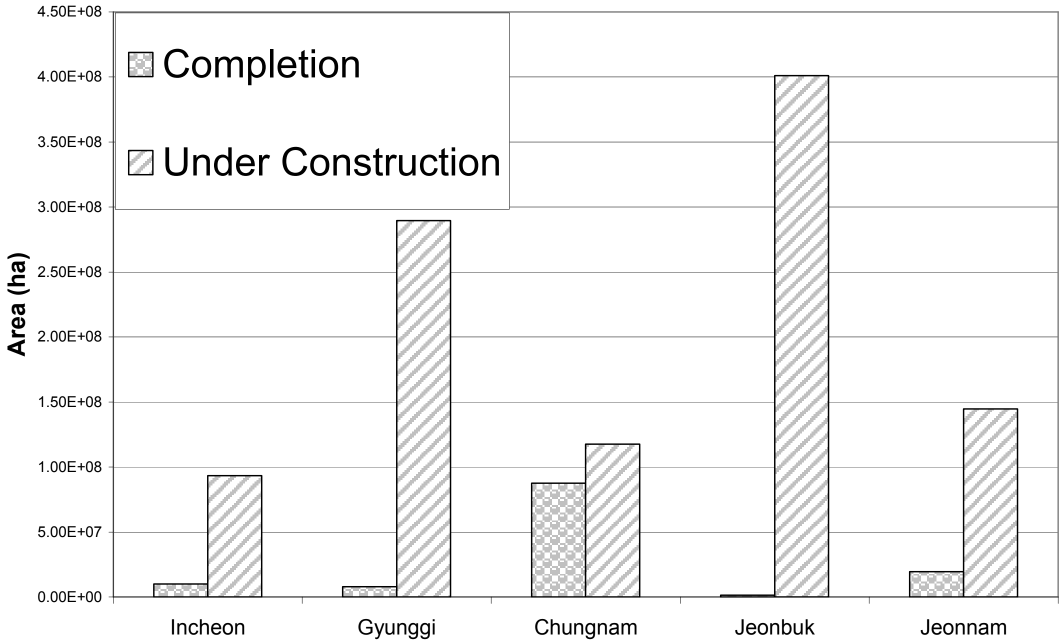
Yellow Sea coast of Korea is heavy industrialized and the trend is not going to decrease in the foreseeable future. The number of completed industrial fascilities in that region is given in the following graph. Gynggi has the highest number of industries and hired the maximum number of employees followed by Incheon, Chungnam and Jeonbuk prefectures.



VI: LAND RECLAMATION IN THE YELLOW SEA

Coastal land reclamation in Korea is an ongoing activity in spite of local protest by interested groups. With limited agricultural land, the nation is in constant search for additional farmland for food self-sufficiency. Reclamation of the mud-flats has been ongoing for nearly 800 years for additional paddy land. It was during the 1970s when large-scale reclamation was practiced for arable land, irrigation water resources, industrial and residential uses. There are increasing public concerns of environmental issues associated with the large-scale reclamation in very recent years. In the long run, conservation of the tidal-flat and its rich ecosystem as natural resources must take precedence than its single-minded economic purposes.

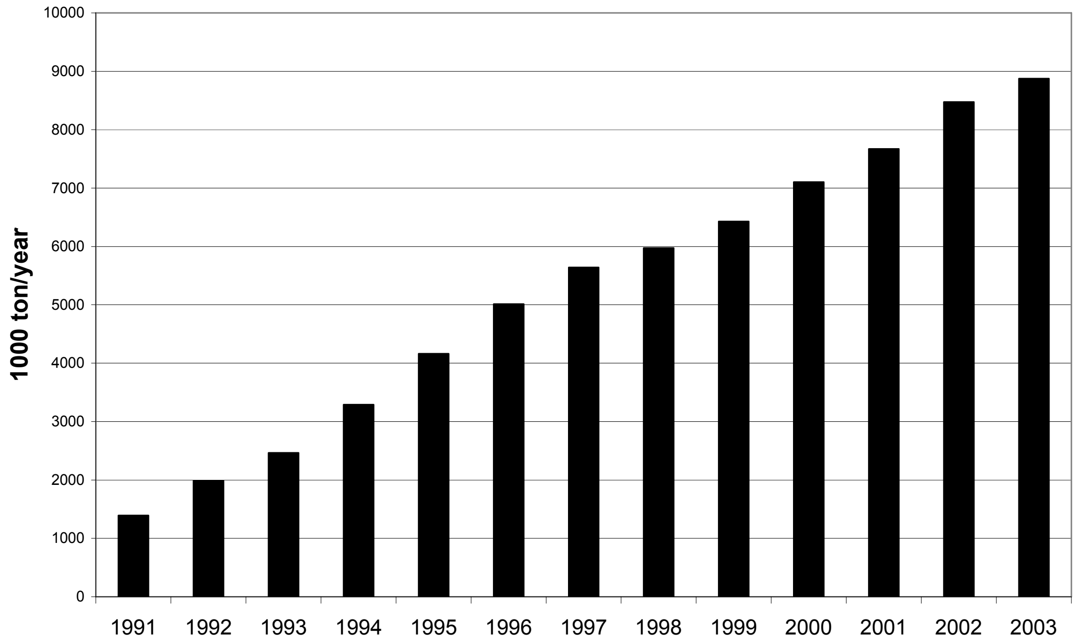
The following chart gives details of reclamation activity in the period of 1980-2005. It gives both completed projects and near completion projects. Jeonbuk prefecture has reclaimed the maximum from the sea, followed by Gyunggi. Interestingly this coincide with industrial development as well. Incheon, Chungnam and Jeonnam prefectures have moderate reclamation activities.



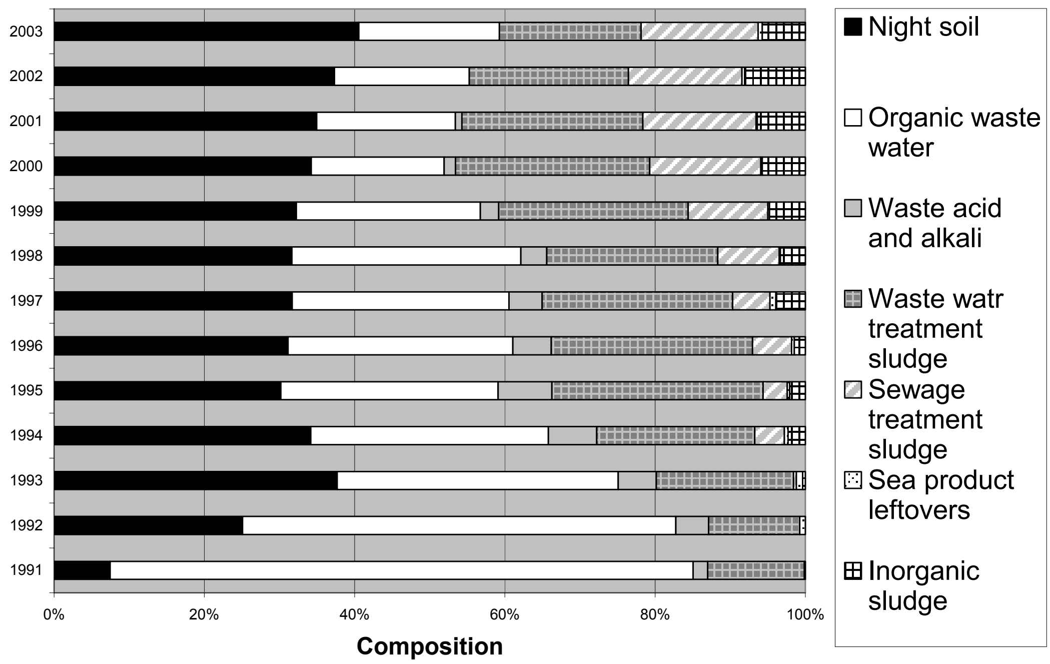
VII. OFFSHORE DUMPING

Ocean dumping of industrial waste was - until recently - an accepted practice of waste disposal in many regions of the world. In the 1970s the quantity of industrial wastes dumped rose from 11 million to 17 million tons corresponding to an increase of Contracting Parties from 23 to 43. Since the early 1980s the quantity decreased and stabilized at about 8 million tons. For the period 1992 - 1995 the total quantity dumped varied from 4.5 million to 6 million tonnes, most of which was dumped by Japan and the Republic of Korea. The overall reduction has been achieved by switching to alternative disposal methods, to re-use of wastes and to cleaner production technologies.

In spite of international pressure and ecological awareness, the Korean dumping activity in the Yellow Sea has not decreased, instead increased, as seen from the following graph.



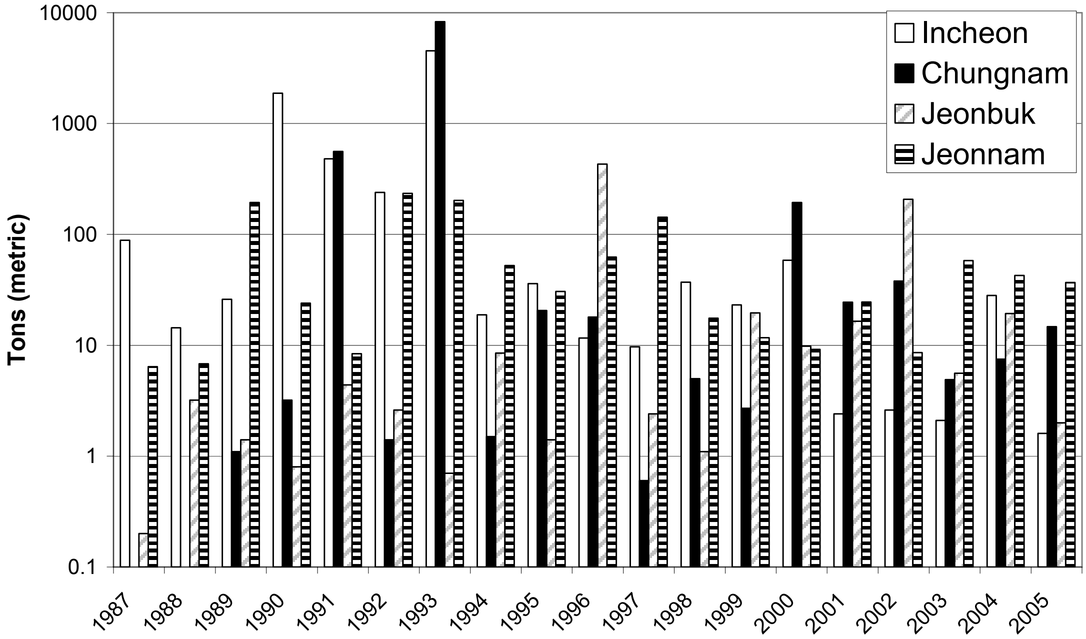
The composition of this waste has changed patterns over the years. For example, organic waste water was the major ingredient of the waste in 1991 while it has reduced from 40% to 10% in 2000. On the other hand, night soil which occupied less than 10% of ocean waste has increased over the years to 20%. The percentage composition of inorganic sledge is on the flex varying by 5% every year. Sewage treatment sludge showed increasing trend in offshore waste composition.



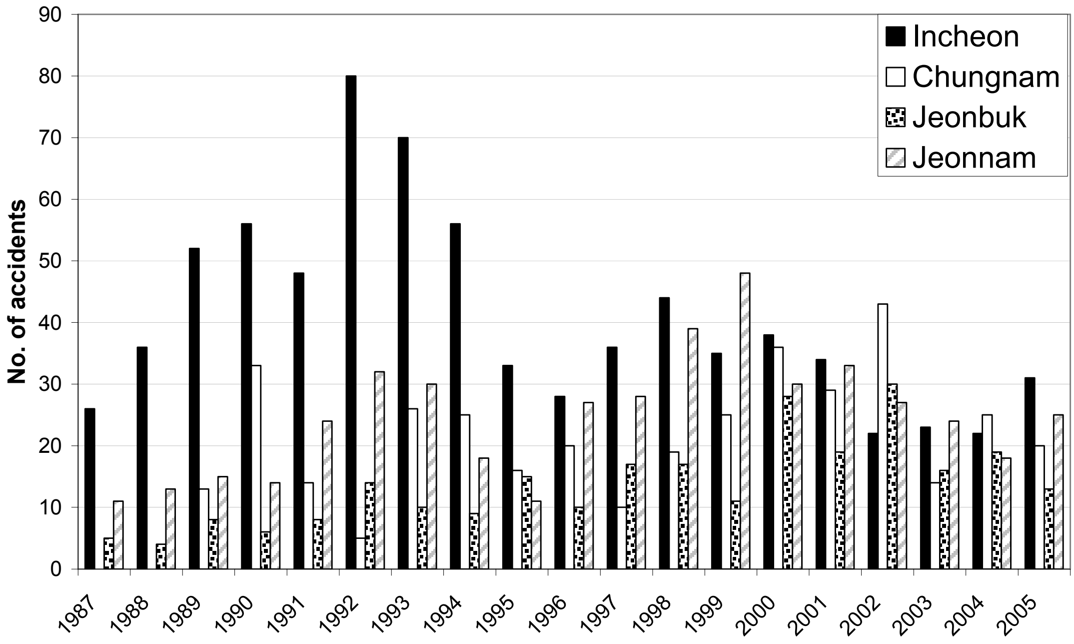
VIII OIL SPILL

Oil spills into rivers, bays, and the ocean are caused by accidents involving tankers, barges, pipelines, refineries, and storage facilities. Oil spills in the Yellow Sea from

Korean side has been recorded for many years. The following graph shows the situation from 1987 to 2005. It gives in Metric Tons the quantity of oil released in to the sea. The biggest accident involving nearly 10000 tons of oil was recorded in Chungnam prefecture followed by Incheon in 1993. The next biggest accident occurred in 1990 and 1991..



In spite of prevention efforts, accidents keep occurring annually, as seen from this graph. The highest number of accidents occurred in 1992, 1993 and 1994.

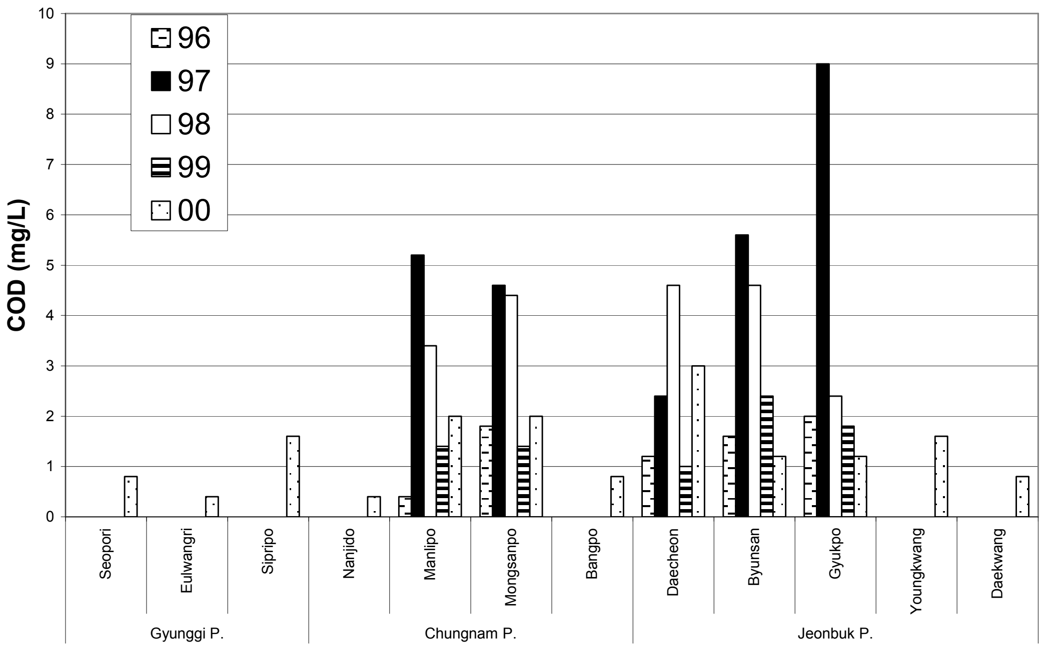


IX. WATER QUALITY in YELLOW SEA BEACHES

Recreational facilities need to be clean for public health purposes. Several water quality parameters are monitored in the Yellow Sea beaches.

COD:

The Chemical Oxygen Demand (COD) is an easy and quick measurement to complement Biological Oxygen Demand (BOD). Waters having a BOD of less than 1 mg/l can be relatively unimpacted by humans and primary candidates for conservation and BOD standards at 2 and 3 mg/l are considered normal. Whereas, COD measures of the amount of oxygen required to chemically transform the organic matter in a sample to carbon dioxide. A low COD denotes little pollution. This number is typically slightly higher than the BOD number since more organic material is transformed chemically than biologically.



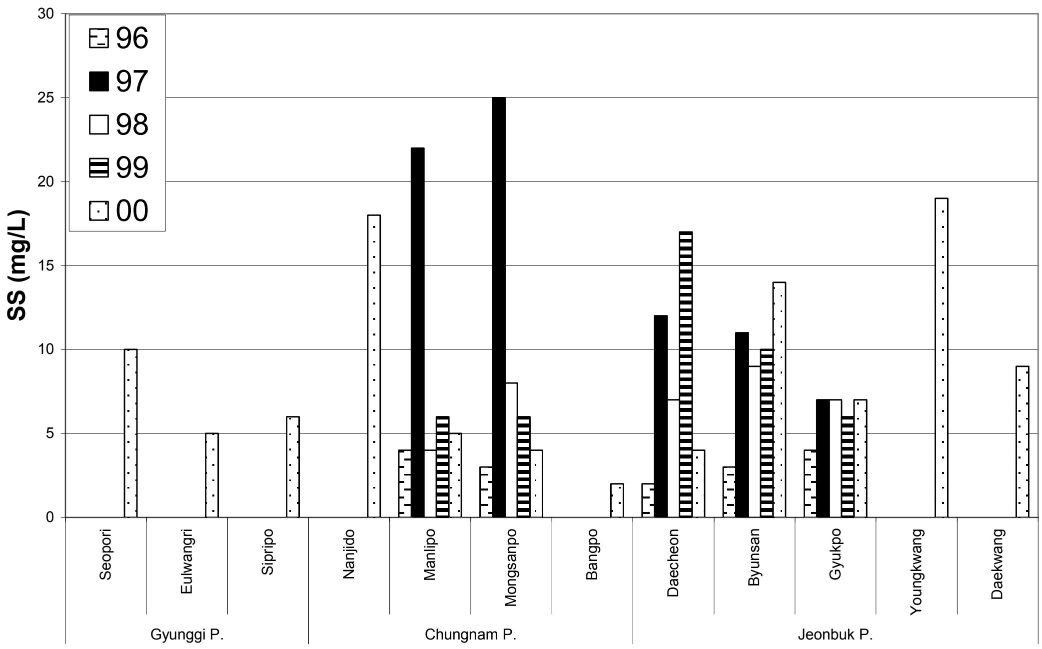
Accordingly, beaches with >3 COD exist in Jeonbuk and Chungnam provinces.

SUSPENDED SOLIDS:

Total suspended solids (TSS) include all particles suspended in water which will not pass through a filter. Suspended solids are present in sanitary wastewater and many types of industrial wastewater. There are also nonpoint sources of suspended solids, such as soil erosion from agricultural and construction sites.

Suspended solids absorb heat from sunlight, which increases water temperature and subsequently decreases levels of dissolved oxygen (warmer water holds less oxygen than cooler water). Some cold water species, such as trout and stoneflies, are especially sensitive to changes in dissolved oxygen. Photosynthesis also decreases, since less light penetrates the water. As less oxygen is produced by plants and algae, there is a further drop in dissolved oxygen levels.

TSS can also destroy fish habitat because suspended solids settle to the bottom and can eventually blanket the river bed. Suspended solids can smother the eggs of fish and aquatic insects, and can suffocate newly-hatched insect larvae. Suspended solids can also harm fish directly by clogging gills, reducing growth rates, and lowering resistance to disease. Changes to the aquatic environment may result in a diminished food sources, and increased difficulties in finding food. Natural movements and migrations of aquatic populations may be disrupted.



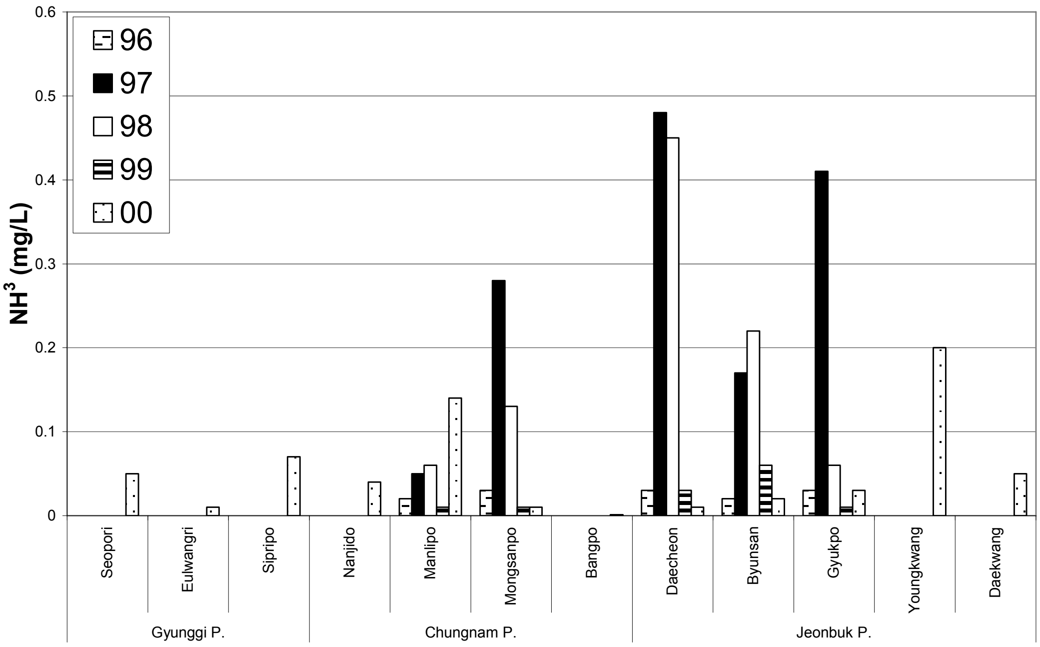
According to EPA recommendation, Suspended Solid (SS) can range from 0-100 mg/L and most of the values in the above figure are lower and with in the range.

AMMONIA (NITROGEN):

Ammonia is extremely toxic and even relatively low levels pose a threat to fish health. Ammonia is produced by fish and all other animals, including ourselves, as part of normal metabolism. Such is the toxicity, that most animals immediately convert it to a less harmful substance, usually urea, and excrete it in urine.

Fish shortcut this process and continually excrete metabolic ammonia directly into the surrounding water via special cells in the gills. In a natural environment, such as seas, lakes and rivers, it would be immediately diluted to harmless levels. However, in the confines of aquaria and ponds, levels can rapidly rise to dangerous levels unless it is constantly removed, usually by biological filtration. Additional amounts are produced from decomposing fish food, fish waste and detritus.

A value of 0.2 mg/L was identified as a pollution threshold for ammonia.
If we apply this to our data Daecheon and Gyukpo beaches in Jeonbuk prefectures exceed this limit. This is true for Mongsanpo beaches in Chungnam prefecture as well.



X. POPs (Persistent Organic Pollutants)

POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they travel. The following POPs are monitored in the Yellow Sea: PAHs, TBT, Phenols, PCBs, DDTs, CHLs, HCHs, Eldrin, Dieldrin and HCB.

WATER:

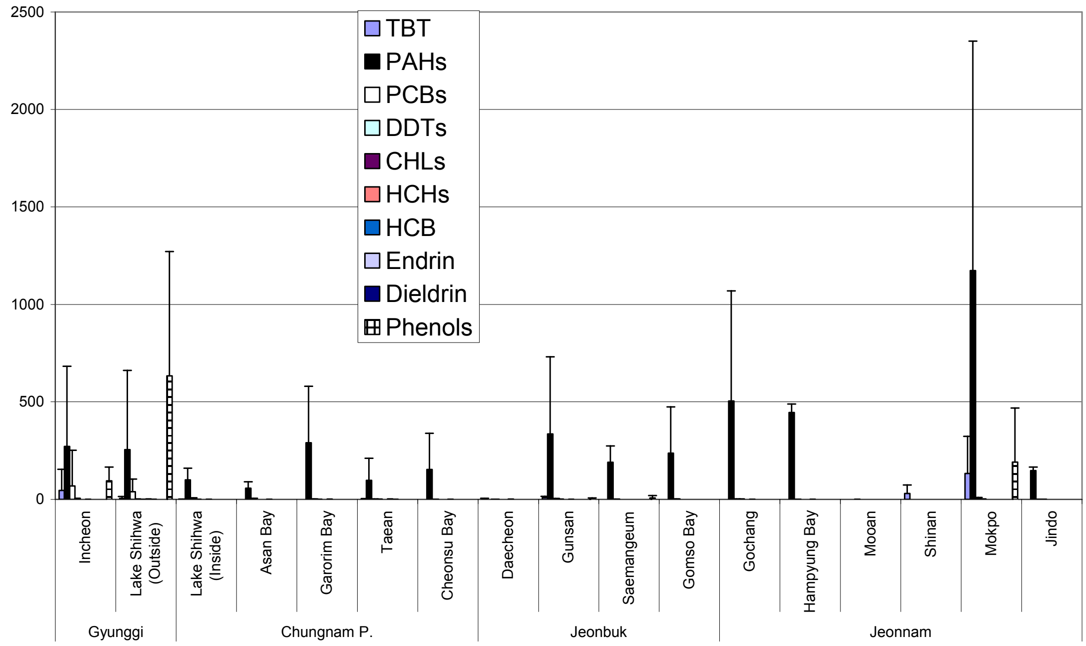
PAHs showed the highest value in water. More than 1 ppm was determined in Incheon area followed by Lake Shihwa. Other provinces such as Chungnam, Jeonbuk, Jeonnam registered PAHs in their waters as well. Phenolic compounds are the next highest, with the highest concentrations in registered in Lake Shihwa and Mokpo. TBTs are prevalent in all provincial waters, but PCBs are determined only in Jeonbuk and Chungnam waters. In a similar way most of the pesticide residues in water are determined in Chungnam, Jeonbuk, Jeonnam provinces and not in Incheon. This is mainly due to the fact that most of the agricultural activities are conducted in the southern provinces while Incheon is mostly industrialized. (see the following two tables)

		PAHs	μg/L		Phenols		μg/L	TBT		μg/L	PCBs		μg/L
Region	**Location**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**
Incheon	Incheon	207	2299	1223	30.5	30.5	30.5	8.8	81.9	41.4			
Gyunggi	Lake Shihwa (outside)							0.0	0.0	0.0			
	Lake Shihwa (inside)	296	697	533	60.0	176.6	118.5	0.0	0.0	0.0			
Chungnam	Asan Bay	95	232	176									
	Garorim Bay												
	Taean	40	108	74				0.0	15.2	1.4	1.16	1.16	1.16
	Cheonsu Bay	96	97	96									
	Daecheon	44	50	47	8.0	133.8	50.8	3.4	29.4	16.4			
Jeonbuk	Gunsan	59	221	140	5.3	219.6	114.1	2.6	24.7	10.8	3.24	3.24	3.24
	Saemangeum	48	242	98	0.0	140.2	24.6	17.9	17.9	17.9	0.00	15.23	6.01
	Gomso Bay												
	Gochang	54	140	102				3.3	46.2	22.2			
Jeonnam	Hampyung Bay	40	40	40									
	Mooan	171	171	171									
	Shinan												
	Mokpo	88	186	150	10.2	149.7	98.6	5.8	33.2	16.1	1.12	1.85	1.48
	Jindo	88	88	88									

Region	Location		DDTs	µg/L		CHLs		µg/L	HCHs			HCB	µg/L		Endrin			Dieldrin	µg/L
Incheon	Incheon	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Gyunggi	Lake Shihwa (outside)																		
	Lake Shihwa (inside)																		
Chungnam	Asan Bay																		
	Garorim Bay																		
	Taean																		
	Cheonsu Bay	0.04	0.04	0.04	0.08	0.08	0.08	0.85	0.85	0.85	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Daecheon																		
Jeonbuk	Gunsan				0.16	0.16	0.16	1.00	1.00	1.00	0.13	0.13	0.13	0.00	0.00	0.00	0.01	0.01	0.01
	Saemangeum	0.11	0.11	0.11	0.11	0.11	0.11	1.20	1.20	1.20	0.11	0.11	0.11	0.07	0.07	0.07	0.03	0.03	0.03
	Gomso Bay	0.00	1.43	0.42	0.00	0.29	0.09	0.00	5.16	1.79	0.00	0.18	0.03	0.00	0.02	0.00	0.00	0.00	0.00
	Gochang																		
Jeonnam	Hampyung Bay																		
	Mooan																		
	Shinan																		
	Mokpo																		
	Jindo	0.12	0.17	0.14	0.10	0.11	0.11	0.65	0.94	0.80	0.00	0.12	0.06	0.12	0.19	0.15	0.00	0.00	0.00

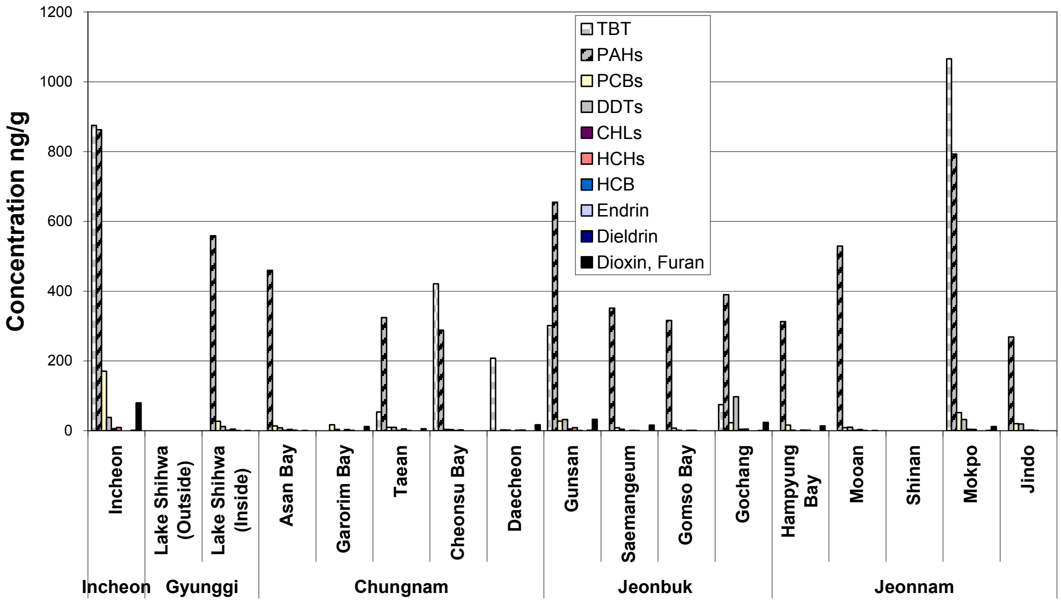
SEDIMENT:

Sediment accumulate most of the POPs on a long term basis thus acting as a major sink. Hence, most of the global studies focus on sediments. In Yellow Sea sediments PAHs, TBT and Phenolic compounds occur noticeable concentrations in all the provinces. Though the concentrations of other POPs are relatively low, they are still detectable.



POPs in BIOTA:

Except Endrin, all the other POPs are measreable in Yellow Sea biota. The highest concentrations are derived from PAHs, TBT, PCBs, DDTs and Dioxins/Furans. Interestingly most of the determined POPs are highest in Incheon province. However, the highest TBT is determined in Jeonnam province. PAHs concentrations are rather uniform in all provinces. DDTs, CHLs, HCHs, HCB are present in all provinces. Dioxins and Furans are detected only in some provinces.



Concentration ng/g
1200
1000
800
600
400
200
0
TBT
PAHs
PCBs
DDTs
CHLs
HCHs
HCB
Endrin
Dieldrin
Dioxin, Furan
Incheon
Lake Shihwa (Outside)
Lake Shihwa (Inside)
Asan Bay
Garorim Bay
Taean
Cheonsu Bay
Daecheon
Gunsan
Saemangeum
Gomso Bay
Gochang
Hampyung Bay
Mooan
Shinan
Mokpo
Jindo
Incheon
Gyunggi
Chungnam
Jeonbuk
Jeonnam