

### 3. RESULTS

#### 3.1. RESULTS IN BACKGROUND AREA

##### 3.1.1. SAMPLING CONDITIONS

###### (1) Sampling

The sampling dates and locations (names, latitudes and longitudes) in Hokkaido are shown in **Table 3.1**. Maps of these areas are shown in **Figure 3.1** and **Figure 3.2**. The latitudes and the longitudes shown in the table were mainly determined using a GPS receiver.

**Table 3.1.** Sampling date and location in Hokkaido

Sampling Date and Time			Sampling Location			
Season	Date	Time	Area	Name	Latitude (N)	Longitude (E)
Summer	Aug 20 2007	13 : 00	Wakkanai	Wakkasakanai	45 ° 07' 56"	141 ° 36' 04"
	Aug 20 2007	15 : 00		Wakkasakanai	45 ° 07' 56"	141 ° 36' 04"
	Aug 21 2007	9 : 00		Wakkasakanai	45 ° 07' 56"	141 ° 36' 04"
	Aug 21 2007	10 : 00		Wakkasakanai	45 ° 07' 56"	141 ° 36' 04"
	Aug 23 2007	9 : 00	Nemuro	Goyoumai	43 ° 22' 10"	145 ° 48' 41"
	Aug 23 2007	10 : 00		Goyoumai	43 ° 22' 10"	145 ° 48' 41"
Winter	Jan 21 2008	13 : 00	Wakkanai	Wakkasakanai	45 ° 05' 14"	141 ° 37' 48"
	Jan 21 2008	15 : 30		Wakkasakanai	45 ° 05' 14"	141 ° 37' 48"
	Jan 22 2008	13 : 00		Wakkasakanai	45 ° 05' 14"	141 ° 37' 48"
	Jan 23 2008	11 : 10	Nemuro	Nossappu	43 ° 23' 05"	145 ° 48' 56"
	Jan 23 2008	12 : 30		Nossappu	43 ° 23' 05"	145 ° 48' 56"
	Jan 24 2008	10 : 00		Nossappu	43 ° 23' 05"	145 ° 48' 56"

Note) The contents of this table is based on "Report on Sample Air Collection for Monitoring of Ozone Depleting Substances FY2007", submitted to the Ministry of Environment by NS Environmental Science Consultant Corporation.

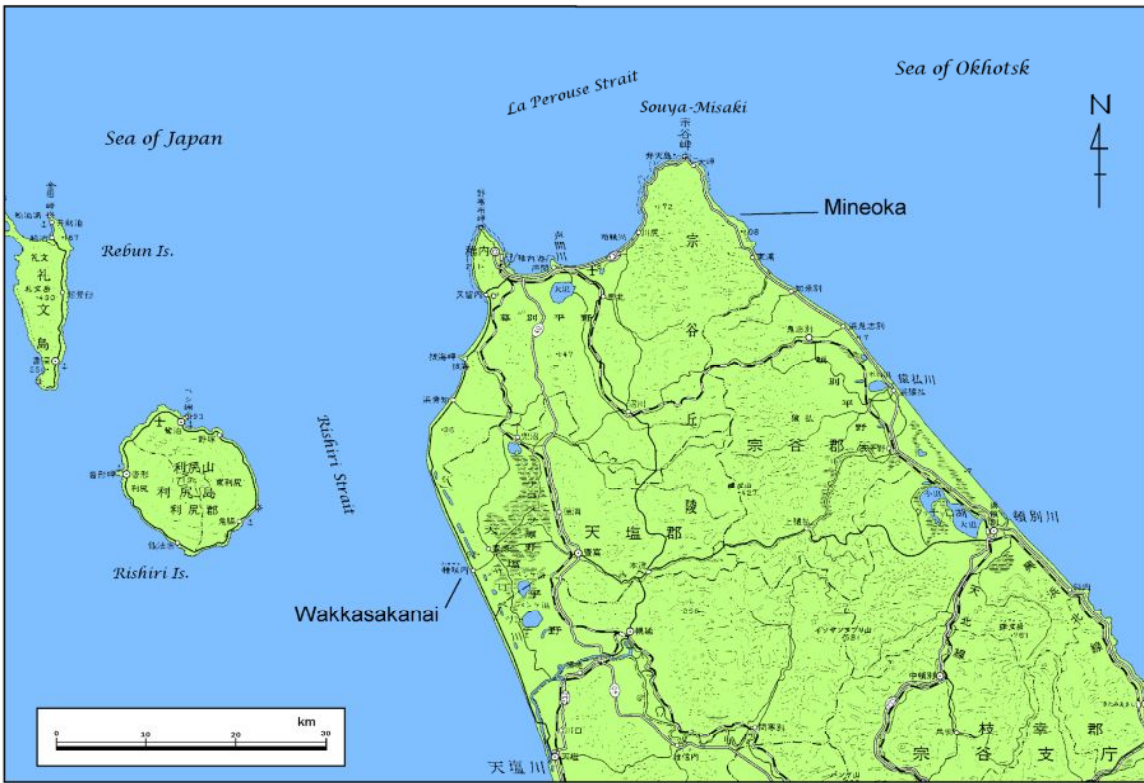


Figure 3.1. Sampling locations in Wakkanai Hokkaido

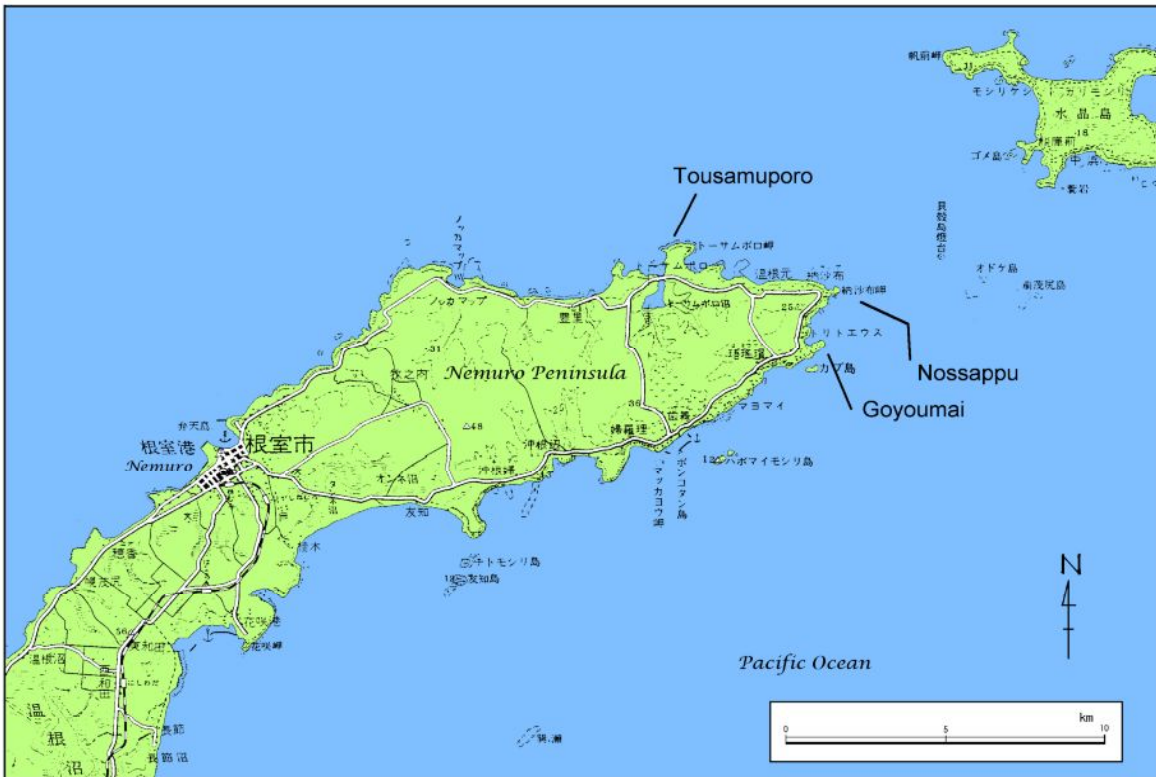


Figure 3.2. Sampling locations in Nemuro Hokkaido

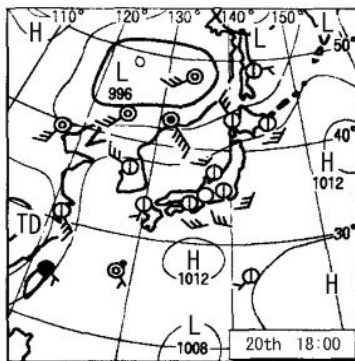
(2) Weather during the Sampling

The weather at the time of the collection of the air samples in Hokkaido was as follows. Weather maps for each sampling day are shown in Figure 3.3.1-Figure3.3.2.

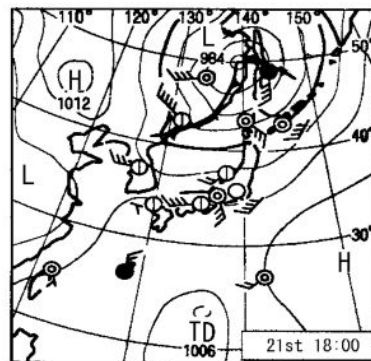
(a) Summer season survey

No typhoon approached Japan during the survey. The severe heat of late summer continued across the western areas of Japan. A low pressure from the Chinese continent slowly approached the Sea of Okhotsk and developed. The low pressure produced strong southerly ~ westerly winds throughout Hokkaido.

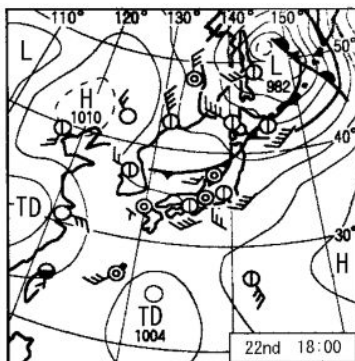
- i) Sampling around Wakkanai was conducted over August 20-21. On August 20, the weather was cloudy. Since a strong west-southwesterly wind (9 m/s) was blowing, the observer conducted the collection of air samples on the seashore of Wakkasakanai (on the western side of the peninsula).
- ii) On the next day August 21, the weather was cloudy. Since a strong westerly wind (7 m/s) was blowing, the observer conducted the collection of air samples on the seashore of Wakkasakanai.
- iii) Sampling around the tip of Nemuro peninsula was conducted over August 22-23. On August 22, the weather was fine. Since a south-southeasterly wind (5 m/s) was blowing, the observer conducted the collection of air samples on the seashore adjacent to the Nosappu-misaki lighthouse.
- iv) On the next day August 24, the region was foggy. Since a southerly wind (2 m/s) was blowing, the observer conducted the collections of air samples on the seashore of Goyoumai (on the southern side of Nosappu).



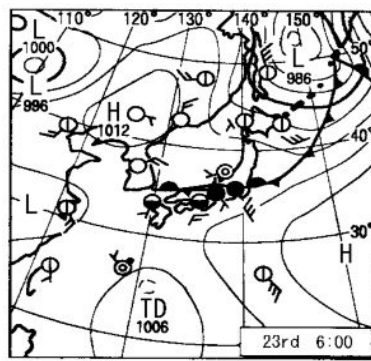
August 20



August 21



August 22



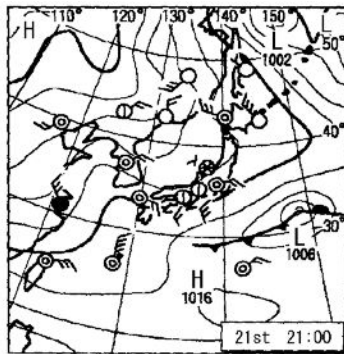
August 23

Figure 3.3.1. Weather maps (summer season)

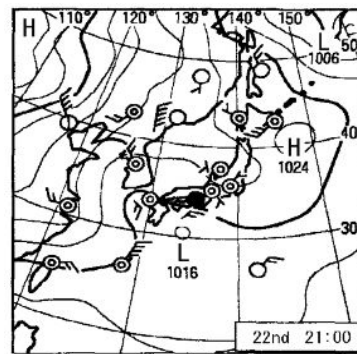
(b) Winter season survey

In the sampling period in the winter season, January 21-24, the wintry pressure pattern continued, and the low temperatures were lower than in a normal year over the major part of the Japanese archipelago. Uncommon for the winter season, no developed low pressure existed across the Sea of Okhotsk, and the weather was calm in Hokkaido for the first half of the survey. On January 24, a low pressure moved into Hokkaido across the Sea of Japan and developed in southern Hokkaido, and this produced strong winds.

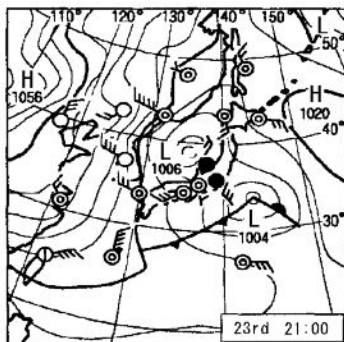
- i) Sampling around Wakkanai was conducted over January 21-22. On January 21, the weather was fine with cloud at times. Since a northwesterly wind (2 m/s) was blowing, the observer conducted the collection of air samples on the seashore of Wakkasakanai (on the western side of the peninsula).
- ii) On the next day January 22, the weather was snow showers. Since a west-northwesterly wind (3-4 m/s) was blowing, the observer conducted the collection of air samples at the identical spot mentioned.
- iii) Sampling around the tip of Nemuro peninsula was conducted over January 23-24. On January 23, the weather was fine. Since a southeasterly or a south-southeasterly wind (3-4 m/s) was blowing, the observer conducted the collection of air samples on the seashore adjacent to the Nosappu-misaki lighthouse.
- iv) On the next day January 24, the weather was cloudy. Since an easterly wind (2 m/s) was blowing, the observer conducted the collection of air samples at the identical spot mentioned.



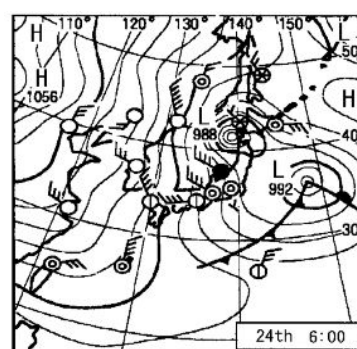
January 21



January 22



January 23



January 24

Figure 3.3.2. Weather maps (winter season)

### 3.1.2. Concentrations of Measured Substances in Background Area

The observed climatic conditions and the atmospheric concentrations of the measured substances in Hokkaido are shown in **Table 3.2** and **Table 3.3**. Although the concentrations are shown to a maximum of 3 digits, not all the figures mean significant figures.

**Table 3.2.** Concentrations of the measured substances in the background area  
August, 2007 (Summer season in FY2007) (unit : pptv)

Sampling Location	Wakkanai			Nemuro		
	Aug 20	Aug 20	Aug 21	Aug 21	Aug 23	Aug 23
Sampling Date	13 : 00	15 : 00	9 : 00	10 : 00	9 : 00	10 : 00
Sampling Time	Cloudy	Cloudy	Partly Cloudy	Cloudy	Fine	Fine
Weather	WSW	W	WSW	W	SSW	SSW
Wind Direction	8.8	7.4	7.7	8.7	2.6	2.4
Wind Speed (m/s)	22.3	21.8	22.0	22.2	22.6	22.2
Air Temperature (°C)	2.4	2.4	2.4	2.4	1.9	1.8
Abs. Humidity (%)	245	244	245	243	240	240
CFC-11	546	545	547	546	543	543
CFC-12	76.3	77.0	76.3	75.9	75.5	75.6
CFC-113	14.9	15.0	14.8	15.1	14.7	14.4
CFC-114	1.00	1.02	1.03	0.99	0.98	0.99
CFC-114a	8.87	9.02	8.91	9.03	9.13	9.14
CFC-115	4.68	4.65	4.66	4.67	4.68	4.58
Halon-1211	3.38	3.36	3.30	3.34	3.38	3.35
Halon-1301	0.48	0.48	0.48	0.49	0.49	0.47
Halon-2402	95.7	96.4	97.0	96.4	95.3	94.9
Carbon tetrachloride	14.5	14.6	14.7	14.3	14.0	14.3
1,1,1-Trichloroethane	199	197	200	(206)	201	202
HCFC-22	21.2	20.2	21.0	20.7	20.0	21.2
HCFC-141b	20.9	19.8	20.6	20.3	20.4	19.7
HCFC-142b	10.7	10.5	9.56	9.62	9.02	9.18
Methyl bromide	(52.8)	50.2	51.1	50.4	50.4	50.2
HFC-134a						

Note 1) Not all the figures mean significant figures.

Note 2) Results closed by parentheses were not used in hereafter calculations or other considerations because these results are suspected to be outliers affected by possible local air pollution or other factors.

**Table 3.3.** Concentrations of the measured substances in the background area  
January, 2008 (Winter season in FY2007) (unit : pptv)

Sampling Location	Wakkanai			Nemuro		
	Jan 21 2008	Jan212008	Jan 22 200	Jan 23	Jan 23	Jan 24
Sampling Date	Jan 21 2008	Jan212008	Jan 22 200	Jan 23	Jan 23	Jan 24
Sampling Time	13 : 00	15 : 30	13 : 00	11 : 10	12 : 30	10 : 00
Weather	Partly Cloudy	Cloudy	Fine	Fine	Fine	Cloudy
Wind Direction	NW	NW	WNW	SE	SSE	SE
Wind Speed (m/s)	2.5	2.3	3.9	2.9	3.8	9.6
Air Temperature (°C)	-6.0	-5.5	-4.0	-1.0	-1.0	-1.0
Abs. Humidity (%)	0.3	0.3	0.3	0.6	0.6	0.5
CFC-11	241	242	241	241	240	241
CFC-12	543	547	547	545	542	543
CFC-113	77.2	77.7	77.1	77.6	76.4	76.6
CFC-114	14.4	15.3	14.8	15.0	15.0	14.7
CFC-114a	1.04	1.05	0.99	1.04	1.02	1.01
CFC-115	9.08	8.96	9.29	9.13	9.22	8.87
Halon-1211	4.57	4.74	4.60	4.73	4.78	4.64
Halon-1301	3.37	3.36	3.35	3.36	3.36	3.36
Halon-2402	0.46	0.48	0.45	0.48	0.45	0.46
Carbon tetrachloride	95.1	95.7	94.9	96.5	95.8	95.3
1,1,1-Trichloroethane	14.4	14.3	14.3	14.8	14.3	14.9
HCFC-22	197	195	199	196	202	202
HCFC-141b	21.2	20.2	21.0	20.7	20.0	21.2
HCFC-142b	19.7	19.5	20.0	20.0	19.7	19.5
Methyl bromide	9.33	10.4	9.18	9.14	9.14	9.29
HFC-134a	52.3	52.7	50.2	49.7	54.0	51.8

Note) Not all the figures mean significant figures.