RADIOACTIVITY SURVEY DATA in Japan

NUMBER 34
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National Institute of Radiological Sciences
Chiba, Japan

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Contents

Science and Technology Agency
National Institute of Radiological Sciences

External Dose Data

External Exposure due to Natural Radiation

(National Institute of Radiological Sciences)

A field survey of exposure rates due to natural radiation has been conducted throughout the Hokkaido district of Japan during June 1971.

The situation of the Hokkaido district in Japan is shown in Figure 1. Distribution of observed locations in the district is indicated in Figure 2. In each location, from one to five sites containing at least 5 stations were made there. A total of 81 sites were measured.

Observations were made using a spherical ionization chamber and several scientillation surveymeters. The spherical plastic ionization chamber of which inner diameter and wall thickness are respectively 200 mm and 3 mm (acrylate) has adequate sensitivity for field survey. The chamber was used as a standard of apparatus, but it is difficult to observe all locations only by the apparatus, so that a surveymeter with a NaI (Tl) 1"ϕ x 1" scintillator was used for regular measurements. Two types of surveymeters, the one with a 2"ϕ x 2" NaI(T1) scintillator and the other with a 3"ϕ x 3" NaI(T1) scintillator, were used as auxiliary devices. In 12 sites, both the chamber and the surveymeter were used for measurement of given stations and their readings are compared for drawing a relationship between them.

Practically the direct reading of the thsurveymeter were reduced into the reading of the plastic chamber corresponding to it from the relationship of linear proportion. Systematic error at caliblation (^{60}Co) and reading error (random) of the plastic chamber were respectively within ±6 % (maximum over all error) and within ±3.5 % (standard error for 6μR/hr). Reading error error of the survey-meter is about ±3% (standard error for 6μR/hr)

Measurements in open bare field were made at one meter above the ground and outdoor gamma-rays exposure rates (μR/hr) were due to cosmic rays as well as terrestrial radiation, so that it may be considered that the contribution of fallout due to artificial origin was very slight.

Gamma-ray exposure rates due to natural radiation in each location are shown in Table 1, and population exposure due to natural radiation in each prefecture of the Hokkaido district is shown in Table 2.

Table 1. Gamma-ray Exposure Rates due to Natural Radiation in each Location of the Hokkaido district – June 1971
by S. Abe, K. Arai, Y. Inoue and K. Fujimoto
(National Institute of Radiological Sciences)

Sub-Prefecture		Location	Exposure Rate (μR/hr)	Apparatus*	Number of Sites measured in each Location
Soya	1	Soya-misaki	6.9	C	1
	2	Wakkanai	8.6	C	1
	3	Hamatombetsu	6.6	C	1
	4	Esashi	9.3	C	1
Rumoi	5	Teshio	9.0	A, C	1
	6	Rumoi	7.9	C	1
Ishikari	7	Hamamasu	7.8	C	2
	8	Sapporo	7.9	C	5
	9	Shikotsu-ko	6.3	A, C	1
	10	Chitose	6.3	C	1

Sub-Prefecture	Location	Exposure Rate (μR/hr)	Apparatus*	Number of Sites measured in each Location
Sorachi	11 Takikawa	9.5	C	1
	12 Bibai	9.2	C	1
	13 Iwamizawa	9.5	C	1
	14 Ashibetsu	8.6	C	1
Shiribeshi	15 Otaru	7.3	C	3
	16 Kyowa, Tomari	9.3	C	6
	17 Shimamaki	8.4	C	1
	18 Kutchan	7.6	C	1
Hiyama	19 Kitahiyama	9.5	C	1
	20 Esashi	8.0	C	1
Oshima	21 Matsumae	9.8	A, C	1
	22 Kikonai	8.3	C	1
	23 Hakodate	7.8	C	5
	24 Mori	5.3	C	1
	25 Yakumo	7.1	C	1
	26 Oshamambe	8.2	C	1
Iburi	27 Abuta	5.4	C	1
	28 Muroran	7.0	A, C	3
	29 Noboribetsu	6.1	C	1
	30 Tomakomai	9.3	C	1
	31 Mukawa	6.0	C	1
Hidaka	32 Shizunai	8.0	C	1
	33 Urakawa	9.2	C	1
	34 Erimo	8.6	C	1
Tokachi	35 Kamishihoro	7.9	C	1
	36 Shintoku	9.2	C	1
	37 Obihiro	8.4	A, C	3
	38 Sarabetsu	6.6	C	1
	39 Hiroo	8.2	C	1
	40 Ashoro	8.1	C	1
Kushiro	41 Akan	5.9	A, C	1
	42 Onbetsu	6.6	C	1
	43 Kushiro	7.5	A, C	3
	44 Akkeshi	8.9	C	1
	45 Teshikaga	5.5	C	1
Nemuro	46 Shibetsu	5.0	C	1
	47 Nemuro	7.2	C	1
Abashiri	48 Okoppe	9.0	C	1
	49 Mombetsu	8.1	A, C	1
	50 Rubeshibe	9.3	C	1
	51 Kitami	6.9	C	1
	52 Abashiri	7.1	A, C	1
Kamikawa	53 Otoineppu	8.0	A, C	1
	54 Nayoro	8.9	C	1
	55 Asahikawa	10.8	A, C	3
	56 Furano	9.2	A, C	1
	57 Kamikawa	11.0	C	1

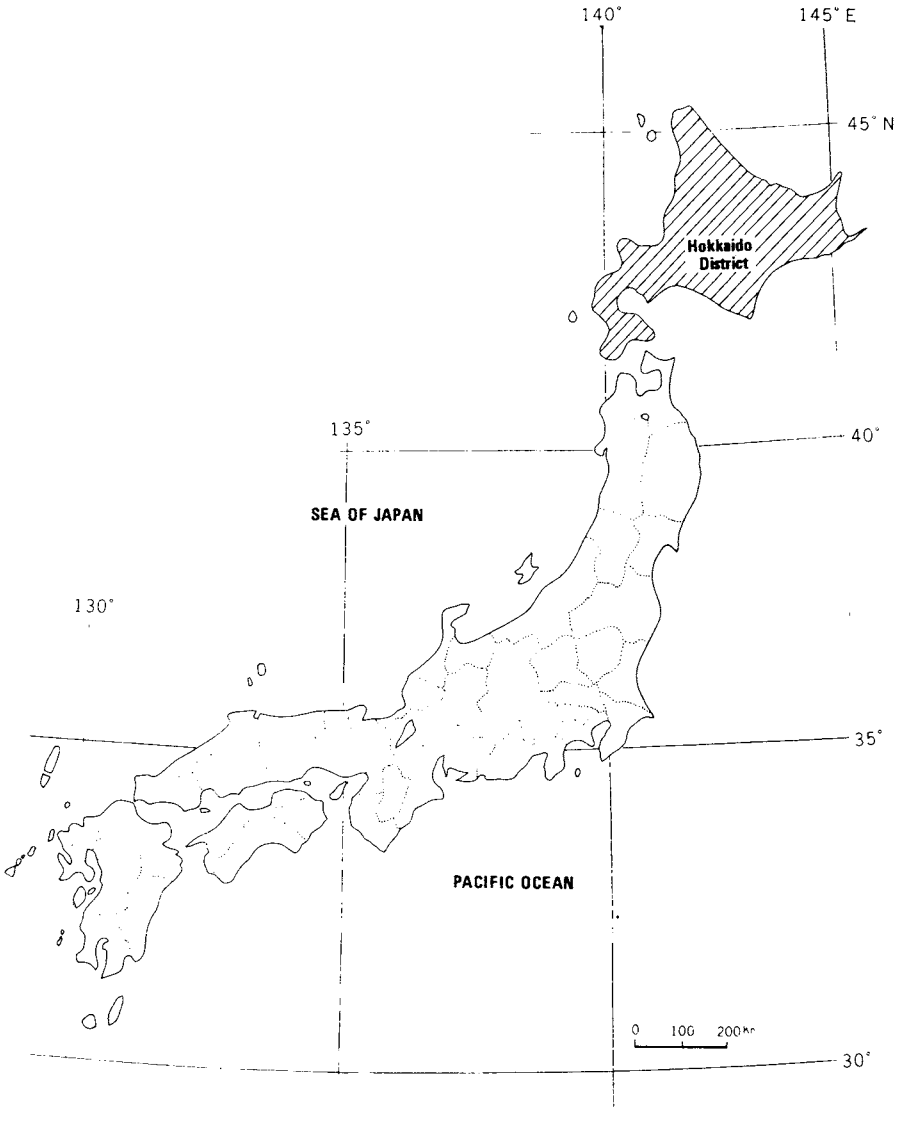
* A: Spherical Ionization Chamber
C: Surveymeter with 1"ϕ x 1" NaI (Tl) Scintillator

Table 2 **Population Exposure due to Natural Radiation in Each Sub-district of the Hokkaido District**
by S. Abe, K. Arai, Y. Inoue and K. Fujimoto
(National Institute of Radiological Sciences)

District	Exposure Rate ± Standard Deviation (μR/hr)	Population* (X 1,000)	Number of Sites
East	7.4 ± 0.8	764	14
Central	9.4 ± 1.2	1,860	29
South	7.7 ± 0.9	2,561	39
Hokkaido	8.3 ± 1.3	5,184	81

Fig. 1 1970 National Census

Figure 1 : The Situation of Hokkaido District in Japan



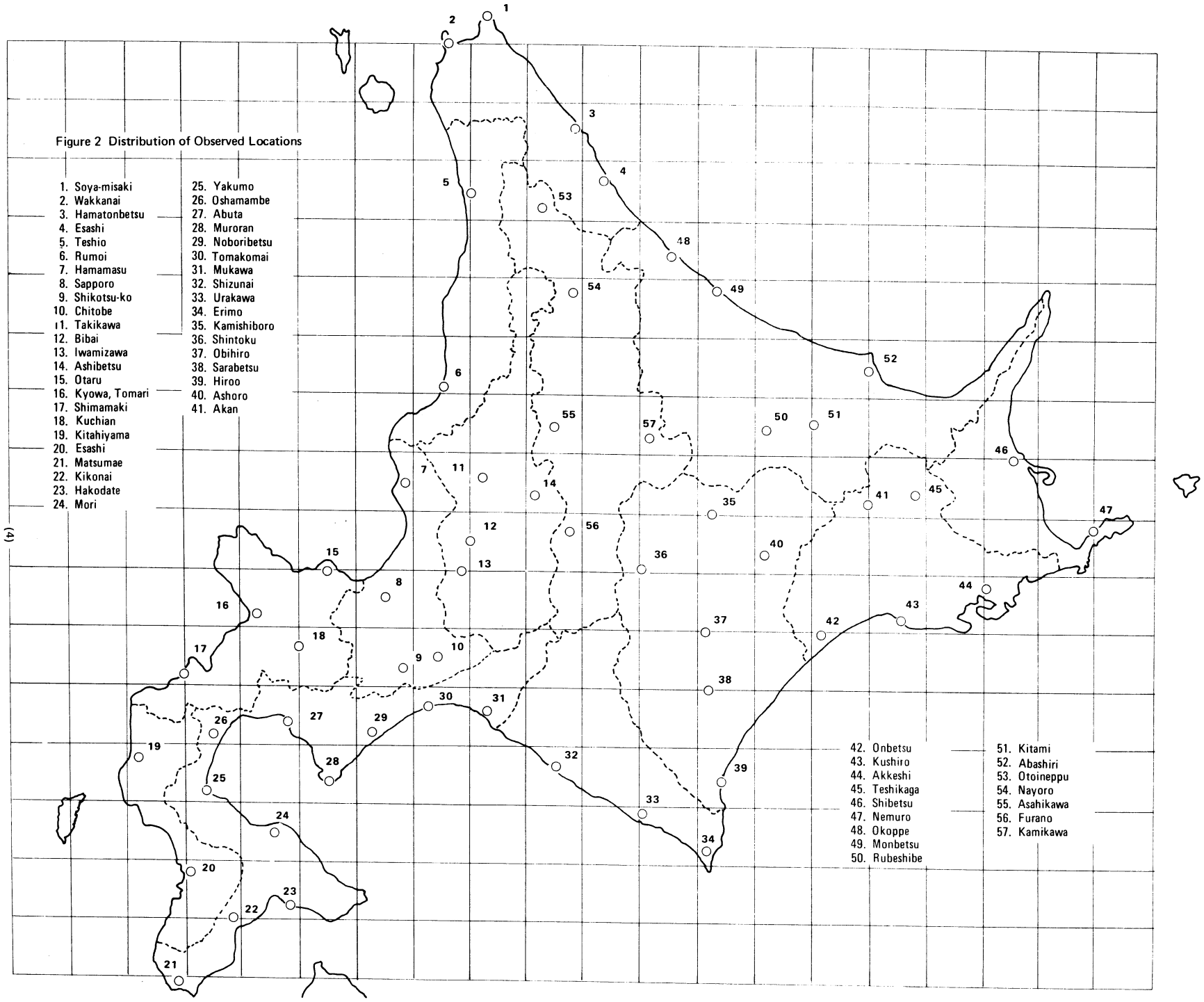


Figure 2 Distribution of Observed Locations

Water Data

Tritium Level of River System and Coastal Water in Japan

(National Institute of Radiological Sciences)

To determine the environmental tritium concentration in Japan, water samples of rivers, streames, ponds and coast were collected in the vicinity of the nuclear power reactor in operation and under construction showing in figure 3. The analyses were carried out by liquid scintillation counting using emulsion scintillator system after electrolytic enrichment.

The data for the samples during one year from October 1970 to September 1971 are shown in Table 3 and 4 these results suggest that tritium level in coastal water is laid on the range from 20 to 200 pCi per liter and in river system from 230 to 500 pCi per liter.

Table 3. Tritium Content of Coastal Water, Oct. 1970 to Jun. 1971, by Y. Inoue and Y. Kasida.
(National Institute of Radiological Sciences)

	Location		Date	pCi/l
1970	NIIGATA	Kakumihama	21, Oct.	118
		Kashiwazaki	22, Oct.	86
	ISHIKAWA	Shiromaru	25, Oct.	140
		Akazumi	26, Oct.	83
		Fukuura	26, Oct.	86
	FUKUI	Niu Bay	26, Nov.	195
		Urazoko Bay	29, Oct.	134
		Takahama	30, Oct.	28
1971	HOKKAIDO	Hamamasu	5, Jun.	107
		Tomari	4, Jun.	71
		Horikabu	4, Jun.	107
		Utajima	3, Jun.	86
		Matsumae	2, Jun.	157
		Ishizaki	2, Jun.	101
	FUKUSHIMA	Okuma	16, Jan.	121
		Okuma	26, Jun.	49
	IBARAKI	Nakaminato	25, Aug.	110
		Oarai	24, Aug.	147
	FUKUOKA	Genkai	9, Apr.	18
			9, Apr.	38

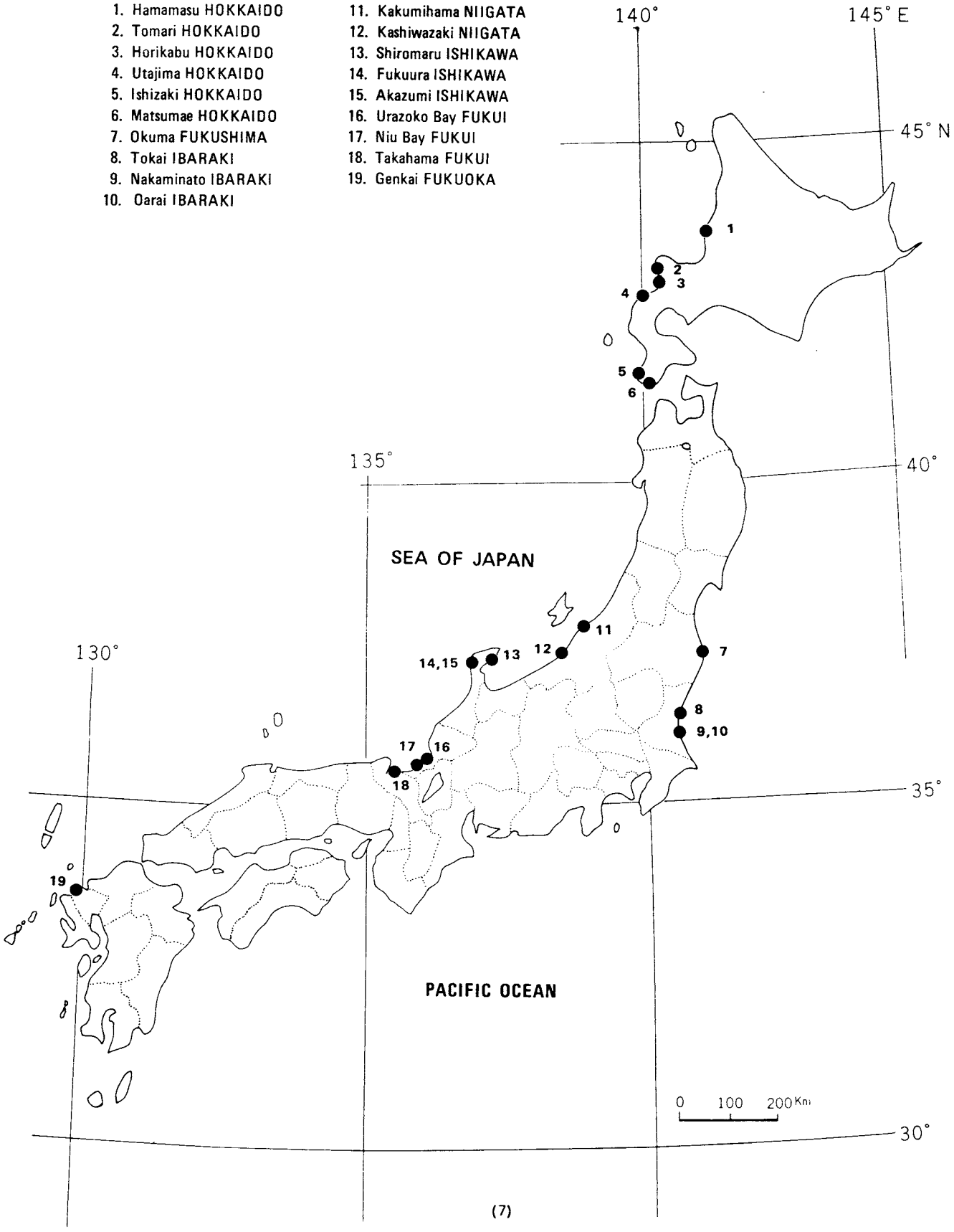
Table 4. Tritium Content of Rivers, Streams, Lake and Ponds, Oct. 1970 to Sept. 1971, by Y. Inoue and Y. Kasida.

(National Institute of Radiological Sciences)

	Location			Date	pCi/l
1970					
	NIIGATA	Shinanogawa	R (Ojiya)	21, Oct.	316
			S. (Kakumi)	21, Oct.	233
	ISHIKAWA		S. (Shiromaru)	29, Oct.	291
	FUKUI	Takamakigawa	S. (Tsuruga)	29, Oct.	284
		Chonoike	P. (Tsuruga)	29, Oct.	236
		Sekiyagawa	S. (Tsuruga)	29, Oct.	276
		Ochiaigawa	S. (Mihama)	26, Nov.	236
		Majogawa	S. (Mihama)	26, Nov.	233
1971					
	HOKKAIDO		S. (Hamamasu)	5, Jun.	476
			S. (Tomari)	4, Jun.	457
		Utajimagawa	S. (Utajima)	3, Jun.	368
		Ribetsugawa	S. (Kitahiyama)	3, Jun.	406
		Ishizakigawa	S. (Ishizaki)	2, Jun.	393
			S. (Matsumae)	2, Jun.	438
	FUKUSHIMA	Sakashita damu	S. (Okuma)	16, Jan.	358
	IBARAGI	Hinuma	L.	24. Aug.	243
		Hinumagawa	R.	25, Aug.	280
		Nakagawa	R. (Nakagouchi)	3, Sept.	368
		Nakagawa	R. (Minatooohashi)	25, Aug.	342
		Shinkawa	S. (Kikanba)	24, Aug.	419
		Kujigawa	R. (Sakakibashi)	24, Aug.	387
		Kujigawa	R. (Kujioohashi)	24, Aug.	353
		Akogiura	P.	24, Aug.	502
	FUKUOKA	Shimobatameike	P. (Genkai)	9, Apr.	251
		Hattagawa	S. (Genkai)	9, Apr.	296

R; River, S; Stream, L; Lake, P; Pond.

Fig. 3. Sampling Locations of River System and Coastal Water in Japan.



Human Data

Strontium-90 in Human Deciduous Teeth

(National Institute of Health)

The National Institute of Health has determined Strontium-90 content in Human Deciduous Teeth, as an index of the accumulation of radioactivity in children, since 1961.

About 92,400 human deciduous teeth have been collected from various area in Japan for ten years. Teeth of children in 3 areas as shown in Figure 7 were subjected to the analysis.

One sample was sufficient to be of 50 to 70 incisors and of 30 to 50 molars for teeth from children born between 1958 and 1964.

The results of Strontium-90 content of teeth from children born during the period 1948 to 1964 in the Kanto District are shown in Table 5 and Figure 4. The risults obtained during the period 1950 to 1964 in the Tokai District are also shown in Table 6 and Figure 5.

Table 7 and Figure 6 shows the results during the period 1957 to 1963 in the Hokuriku District.

Table 5. ^{90}Sr in Human Deciduous Teeth of Children born in Kanto District – 1648 to 1964 –
by T. Nagai and T. Ishii
(National Institute of Health)

(pCi/gCA ± S.E.)

Birth Year	Breast Fed	Mixed Fed	Bottle Fed
1948	0.04 ± 0.01 (1)		
1949	0.07 ± 0.01 (1)		
1950	0.17 ± 0.04 (2)		
1951	0.18 ± 0.05 (3)		
1952	0.23 ± 0.04 (7)	0.19 ± 0.03 (3)	
1953	0.26 ± 0.03 (5)	0.24 ± 0.06 (4)	
1954	0.30 ± 0.04 (13)	0.45 ± 0.09 (7)	0.46 ± 0.04 (4)
1955	0.72 ± 0.07 (18)	0.88 ± 0.13 (7)	1.14 ± 0.16 (7)
1956	0.78 ± 0.07 (19)	0.99 ± 0.08 (12)	1.33 ± 0.20 (5)
1957	0.87 ± 0.12 (14)	1.58 ± 0.20 (11)	2.03 ± 0.28 (7)
1958	1.23 ± 0.09 (13)	1.73 ± 0.16 (11)	2.46 ± 0.19 (8)
1959	1.32 ± 0.17 (9)	2.52 ± 0.19 (9)	2.69 ± 0.17 (8)
1960	1.44 ± 0.17 (7)	1.96 ± 0.20 (9)	2.62 ± 0.16 (8)
1961	1.41 ± 0.16 (7)	1.81 ± 0.10 (7)	2.22 ± 0.26 (6)
1962	1.95 ± 0.14 (5)	3.44 ± 0.21 (6)	3.37 ± 0.31 (5)
1963	3.91 ± 0.28 (5)	6.20 ± 0.47 (6)	6.56 ± 0.75 (5)
1964	4.66 ± 0.11 (3)	8.88 ± 0.74 (3)	10.22 ± 0.10 (2)

Number of samples analyzed in parentheses.

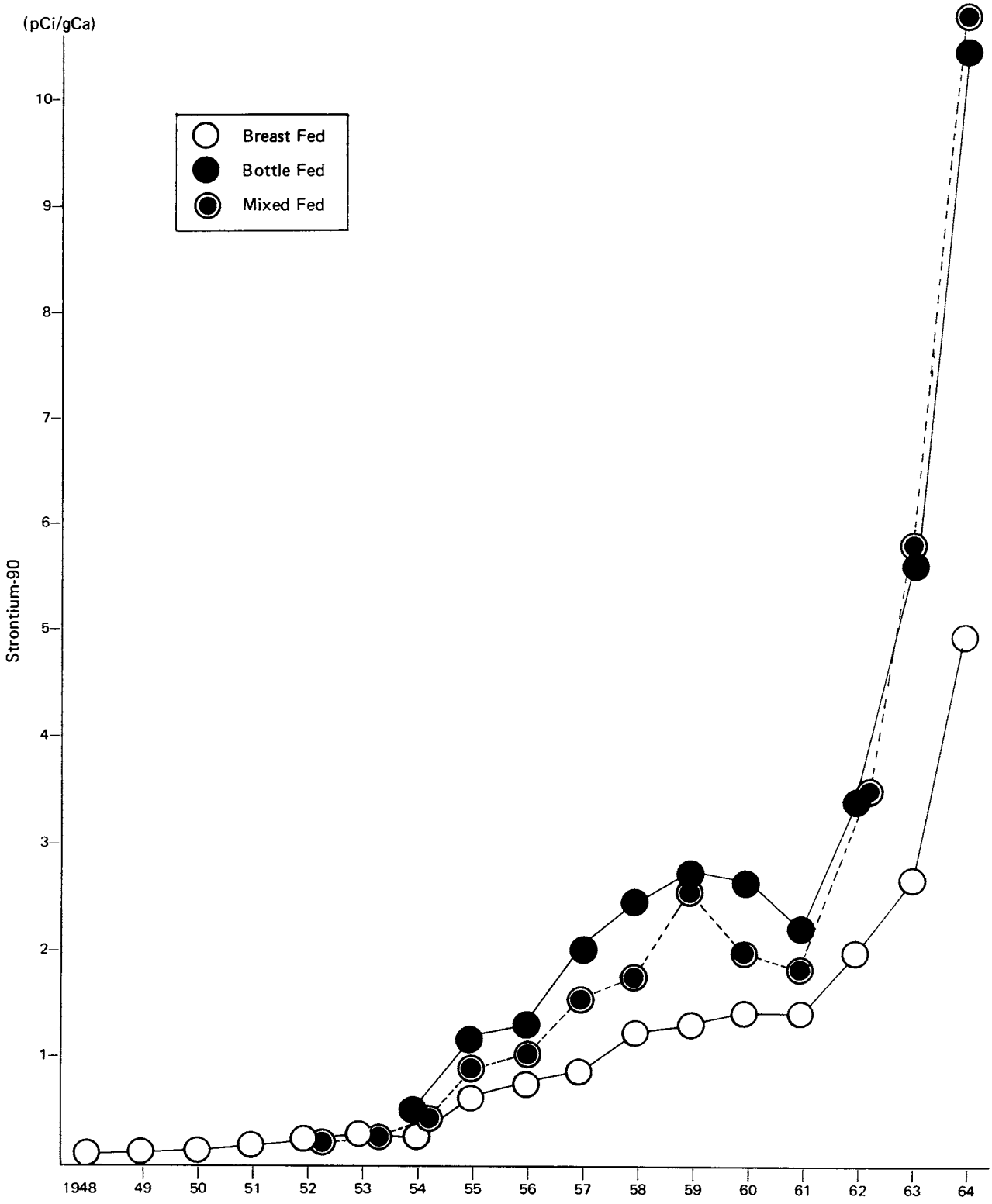


Figure 4. Sr-90 Contents in Human Deciduous Teeth (Kanto)

Table 6. **^{90}Sr in Human Deciduous Teeth or Children born in Tokai District – 1950 to 1964 –**
by T. Nagai and T. Ishii
(National Institute of Health)

(pCi/gCa ± S.E.)

Birth Year	Breast Fed	Mixed Fed	Bottle Fed
1950	0.16 ± 0.02 (1)		
1951	0.08 ± 0.02 (1)		
1952	0.11 ± 0.01 (1)		
1953	0.22 ± 0.02 (1)	0.29 ± 0.03 (1)	
1954	0.32 ± 0.08 (3)	0.43 ± 0.02 (1)	1.04 ± 0.06 (1)
1955	0.60 ± 0.07 (2)	±	
1956	0.88 ± 0.07 (5)	1.12 ± 0.09 (1)	
1957	0.99 ± 0.15 (6)	1.11 ± 0.08 (2)	2.28 ± 0.06 (1)
1958	1.62 ± 0.26 (6)	1.64 ± 0.14 (4)	2.76 ± 0.08 (2)
1959	1.64 ± 0.13 (10)	2.36 ± 0.19 (4)	3.13 ± 0.67 (3)
1960	1.63 ± 0.18 (10)	2.21 ± 0.18 (6)	2.80 ± 0.19 (3)
1961	1.61 ± 0.14 (6)	1.74 ± 0.10 (5)	2.18 ± 0.13 (2)
1962	1.87 ± 0.15 (7)	2.90 ± 0.17 (4)	3.54 ± 0.46 (3)
1963	2.90 ± 0.21 (7)	4.89 ± 0.57 (4)	6.84 ± 0.47 (5)
1964	4.16 ± 0.26 (4)	7.56 ± 0.31 (3)	10.09 ± 0.51 (3)

Number of samples analyzed in parentheses.

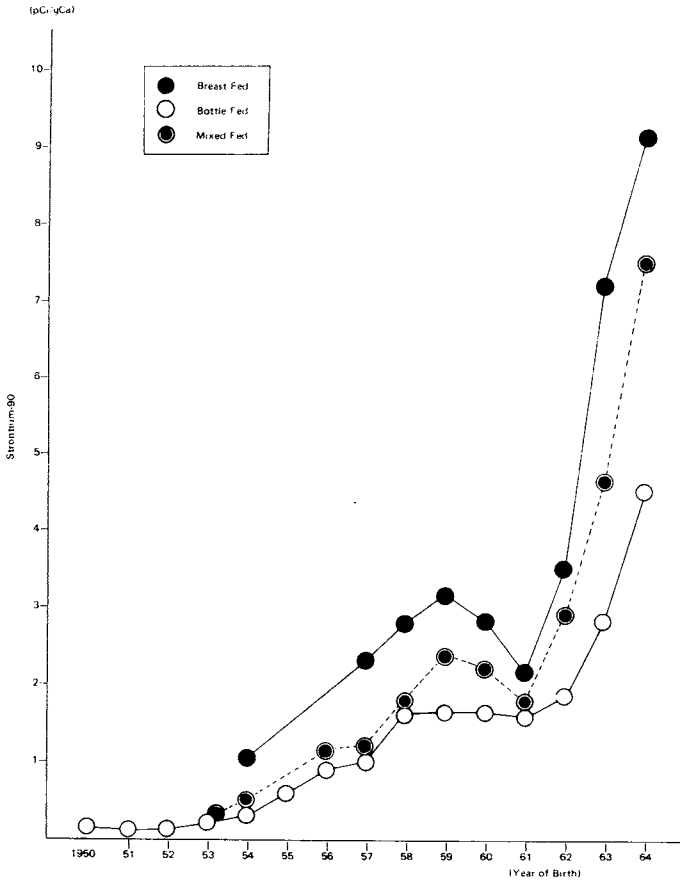


Figure 5. Sr-90 Contents in Human Deciduous Teeth (Tokai)

Table 7. **^{90}Sr in Human Deciduous Teeth of Children born in Hokuriku District – 1957 to 1963 –**
by T. Nagai and T. Ishii
(National Institute of Health)

(pCi/gCa ± S.E.)

Birth Year	Breast Fed	Mixed Fed	Bottle Fed
1957	1.06 ± 0.09 (1)		
1958	1.36 ± 0.73 (2)	2.71 ± 0.06 (1)	
1959	2.19 ± 0.30 (2)	3.63 ± 0.10 (1)	
1960	1.84 ± 0.13 (5)	2.46 ± 0.17 (3)	2.32 ± 0.30 (2)
1961	1.97 ± 0.17 (5)	2.47 ± 0.18 (3)	2.32 ± 0.30 (2)
1962	2.25 ± 0.02 (2)	3.03 ± 0.19 (3)	3.58 ± 0.27 (2)
1963	3.82 ± 0.03 (2)	4.92 ± 0.12 (1)	5.83 ± 0.13 (1)

Number of sample analyzed in parentheses.

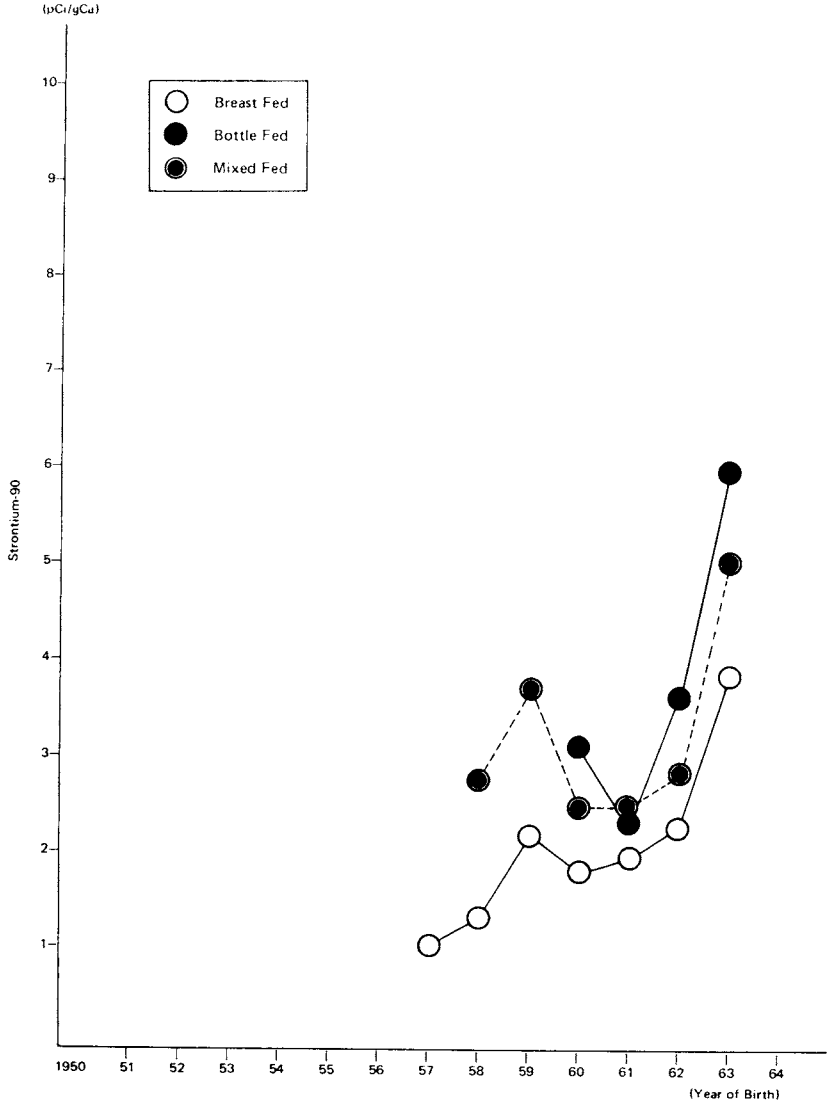
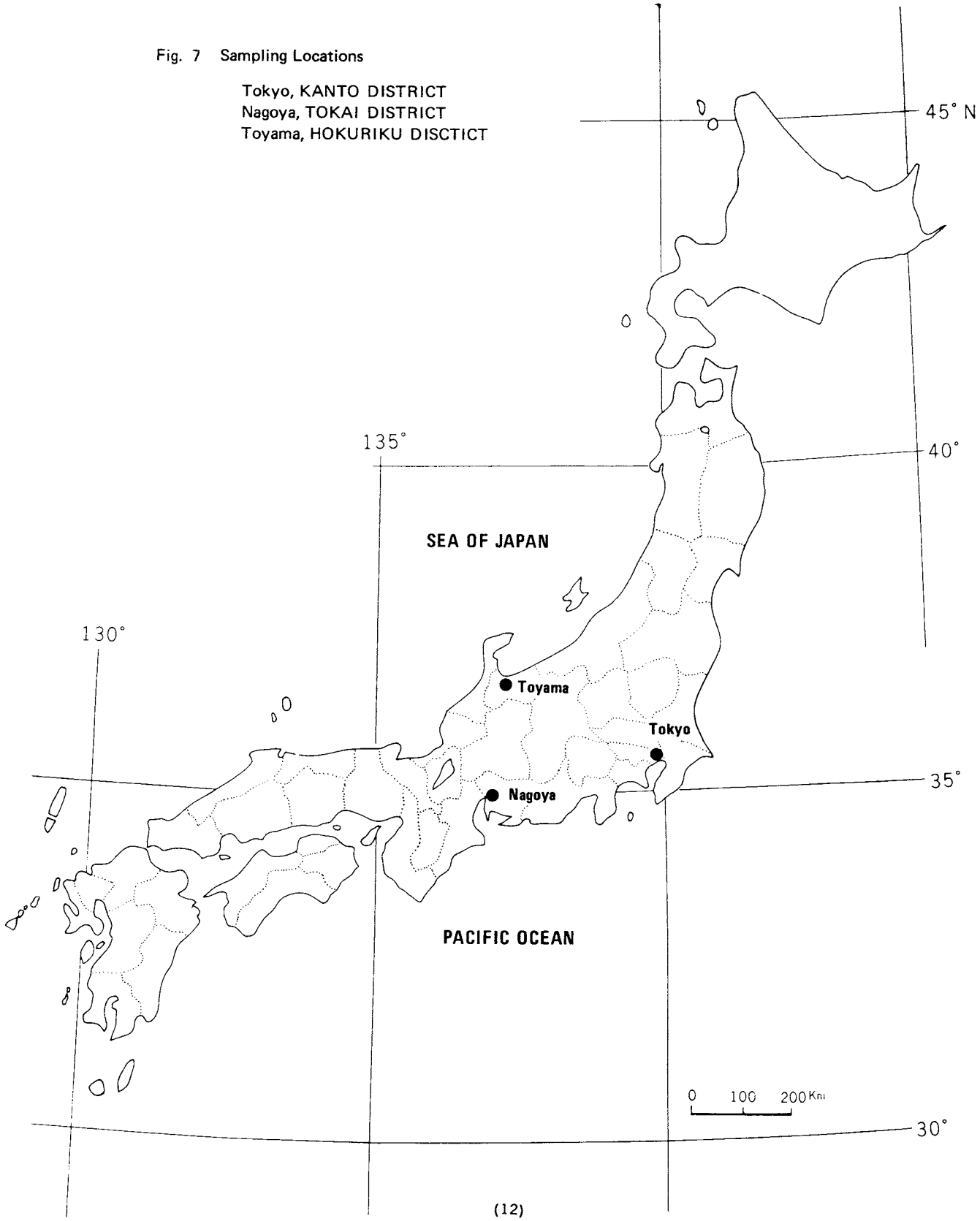


Figure 6. Sr-90 Contents in Human Deciduous Teeth (Hokuriku)

Fig. 7 Sampling Locations

Tokyo, KANTO DISTRICT
Nagoya, TOKAI DISTRICT
Toyama, HOKURIKU DISCTICT



Data of Nuclear Test of the People's Republic of China

Meteorological Data

12th Nuclear Test

Gross Beta-Radioactivity in Upper Air

(Research and Development H.Q., Japan Defense Agency)

Scince 1960, Research and Development H.Q., Japan Defense Agency has measured the radioactivity of the radioactive debris in the lower level of the stratosphere and tropopause at regular intervals, using aircrafts with air-born dust sampler under the wing.

Just after the 12th Nuclear Test of China, the special measurements were carried out over three areas of Japan as shown Figure 8.. The gross beta-activity of each collected sample did not show any remarkable change, and was in almost same level as usual.

Results obtained by the special measurements are shown in Table 8.

Table 8. **Gross β-activity in Upper Air**

by K. Kenmochi, S. Igarashi, K. Kitazawa, T. Matsumura, M. Onuma, T. Akimoto

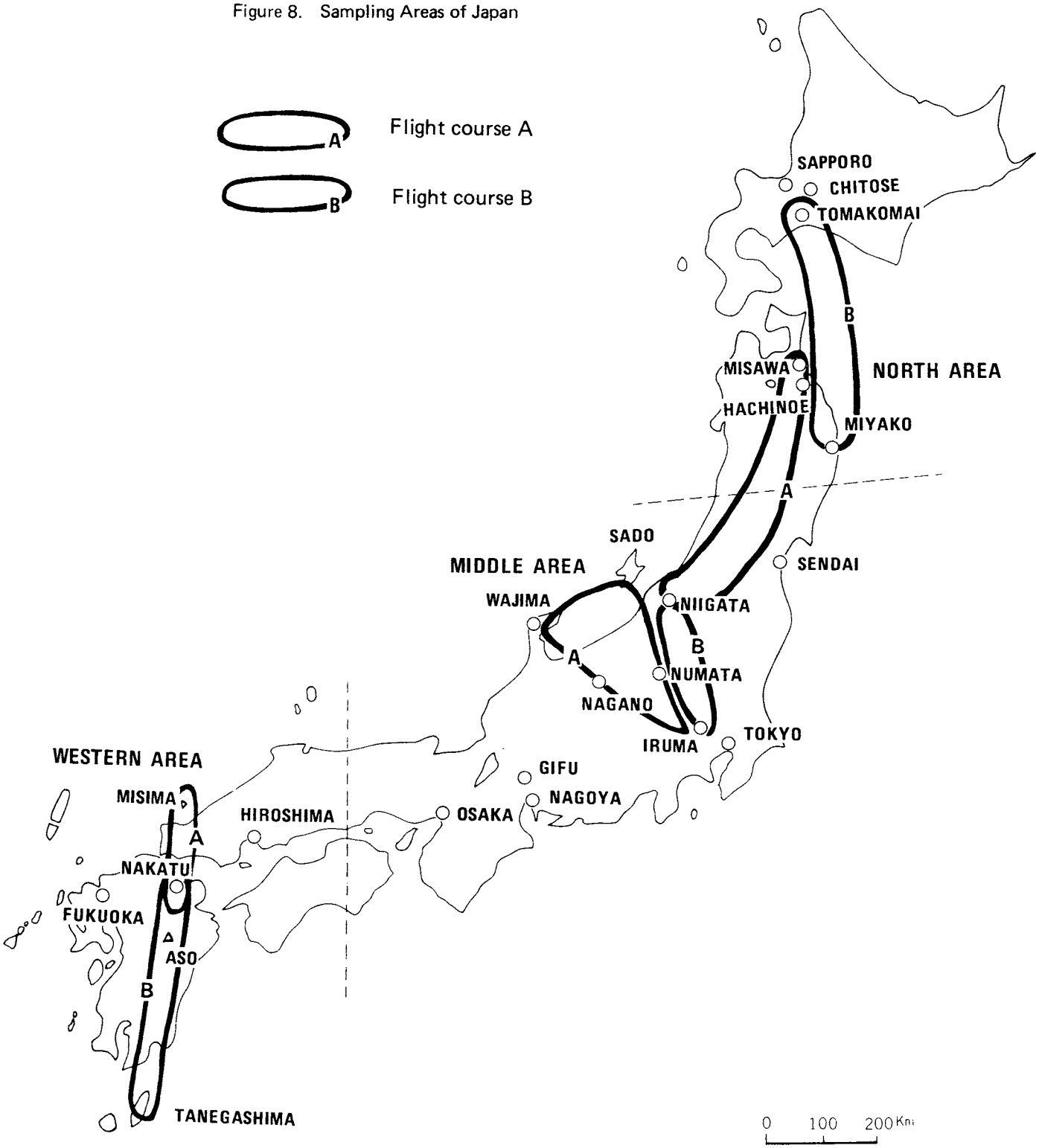
(Research & Development H.Q., Japan Defense Agency)

[unit = pCi/m^3]

Sampling Date		Altitude (feet)	Noath Area	Middle Area	Western Area
Nov. 19,	18:07	37,000		3.2*	
	20:35	35,000			3.7*
	21:28	37,000		3.3*	
	23:12	37,000	1.8*		
Nov. 20.	01:27	37,000	1.8*		
	01:40	30,000		0.4*	
	02:43	30,000	0.6*		
	03:42	30,000		0.4*	
	04:51	30,000	1.0*		
	08:40		18,000		0.15**
	11:51		18,000		0.17**
Nov. 25.	08:42		16,000	0.10**	
	08:53	1	16,000	0.14**	
	09:30		16,000		0.08*

Remarks 1) * : Corase A (See in Fig. 9)
2) **: Coarse B (See in Fig. 9)
3) Usual value of radioactivity density before the 11th Nuclear Test was less than 3.2 pCi/m^3.

Figure 8. Sampling Areas of Japan



13th Nuclear Test

Gross Beta-Radioactivity in Rain and Dry Fallout

(National Institute of Radiological Sciences)

Daily rain and dry fallout samples were countinuausly from (9 a.m. to the next 9 a.m.) collected on the roof of the building of National Institute of Radiological Sciences in Chiba city, to determine the gross Beta-activity.

Gross Better-activity was measured with a Geiger-Miller counter using the standard of Uranium Oxide (U_3O_8).
are shown in Table 9..

In the sample of the 10th – 14th, Jan., 1972 Neptunium-239 and Technetium-99m and other short lived radionuclides were detected by γ-ray spectroscopic method using NaI(T1) and Ge(Li) detector. The γ-ray spectrum of the sample are shown in Figure 9.

Sampled milk at two stations in Chiba-city was analyzed concerning radioactive Iodine. The result was shown in Table 10.

Sampling location of Chiba-city was shown in Figure 10.

Table 9. Gross β-radioactivity in Rain and Dry Fallout collected in a tray at Chiba City
– 8th to 14th Jan., 1972 –
by K. Kamada, M. Arai, M. Yukawa and M. Saiki
(National Institute of Radiological Sciences)

Date of Sampling	Date of Determination	Gross β-activity (mCi/km^2)
8 ~ 9 Jan., 1972	9 Jan., 1972	0.01
9 ~ 10 Jan., 1972	10 Jan., 1972	0.02
10 ~ 11 Jan., 1972	11 Jan., 1972	37.8
11 ~ 12 Jan., 1972	12 Jan., 1972	28.2
12 ~ 13 Jan., 1972	13 Jan., 1972	9.9
13 ~ 14 Jan., 1972	14 Jan., 1972	9.9

Table 10. Radioactive Iodine in Milk collected in Chiba City
– 9th to 14th Jan., 1972 –
by H. Kamada, G. Tanaka, H. Kawamura and M. Saiki
(National Institute of Radiological Sciences)

Sampled From	Date of Sampling	Date of Determination	Concentration of Radioactive Iodine (pCi/ℓ)	Remarke
Farm	9 Jan., 1972	9 Jan., 1972	0	NaI
Farm	10 Jan., 1972	10 Jan., 1972	0	NaI
Farm	11 Jan., 1972	11 Jan., 1972	0	NaI
Collecting center	12 Jan., 1972	12 Jan., 1972	(0.5±0.6)	CA
Farm	12 Jan., 1972	12 Jan., 1972	(25±3)	NaI
Collecting center	13 Jan., 1972	13 Jan., 1972	0	CA
Farm	13 Jan., 1972	13 Jan., 1972	(37±4)	NaI
Collecting center	14 Jan., 1972	14 Jan., 1972	(2.3±1.1)	CA
Farm	14 Jan., 1972	14 Jan., 1972	(13±3)	NaI

* Detectable limits Radiochemical analysis; CA; about 1pG/ℓ
milk matrix by NaI (Tℓ); NaI; about 50pG/ℓ

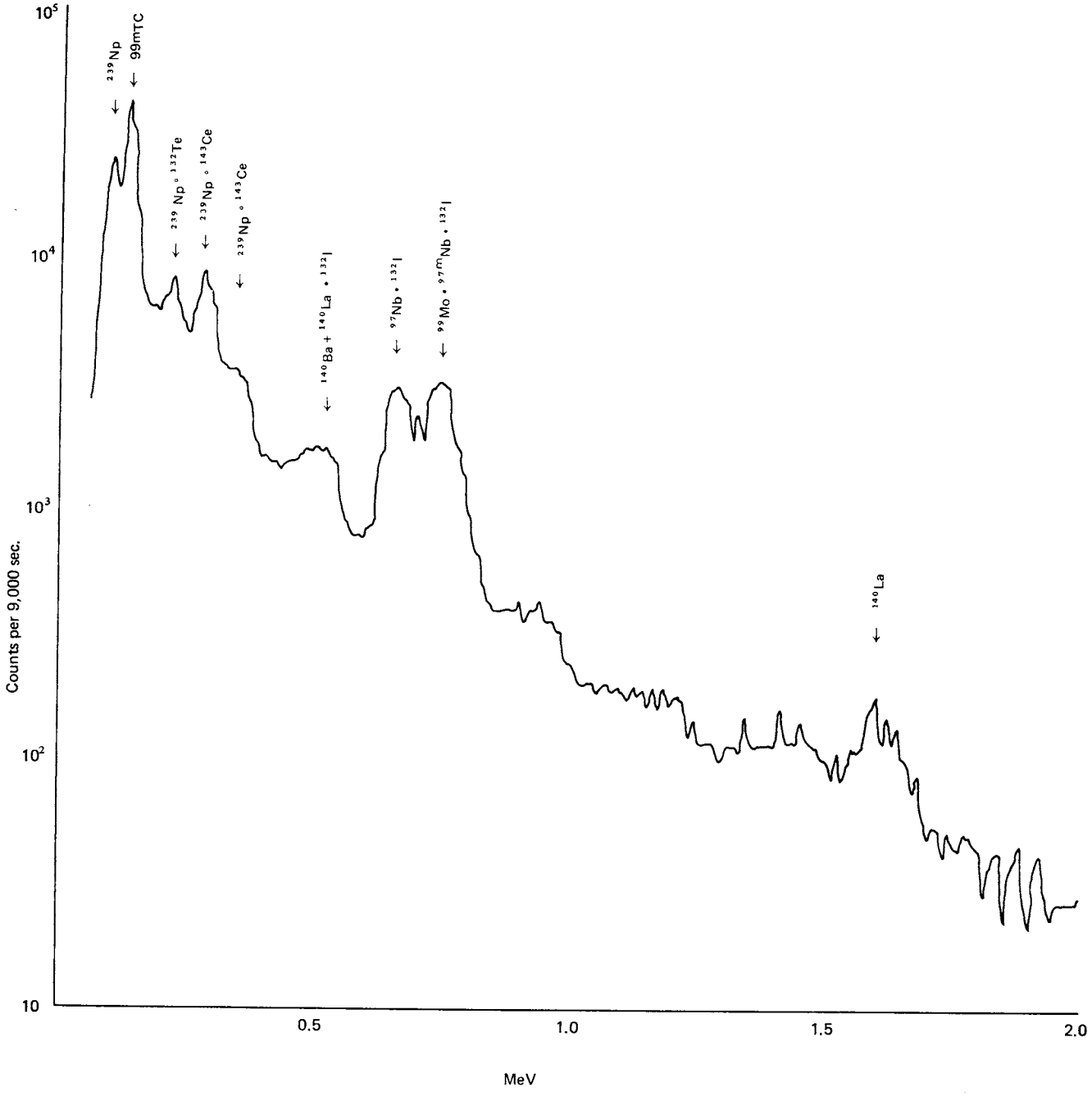
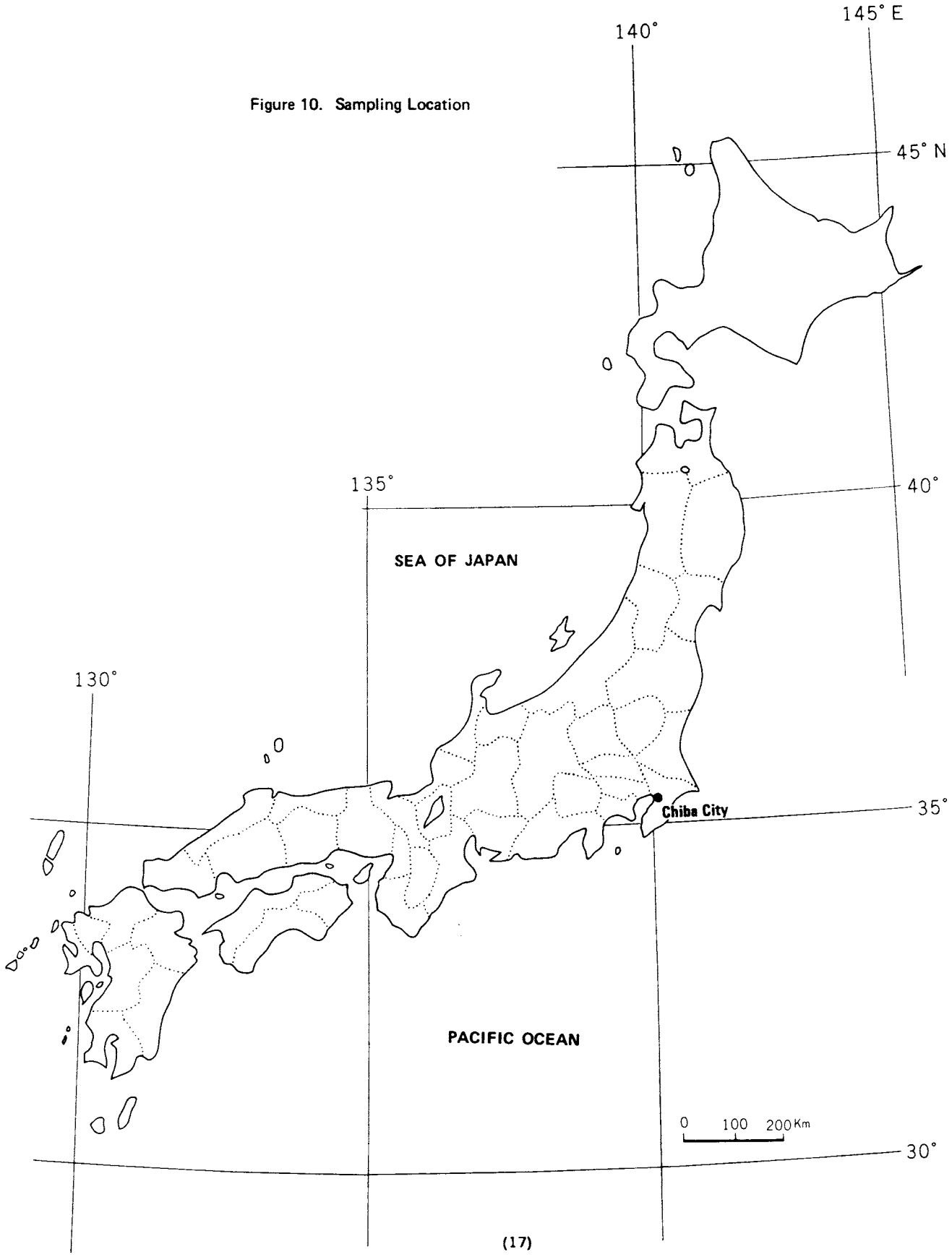


Figure 9. γ-ray Spectrum of Rain and Dry Fallout
By H. Kamada and M. Saiki
(National Institute of Radiological Sciences)

Figure 10. Sampling Location



Gross Beta-radioactivity in Rain and Airborne Dust

(Japan Meteorological Agency)

Survey of gross Beta-radioactivity in rain and airborne dust has been conducted by using the data from 13 stations of Japan Meteorological Agency shown in Figure 14.

The procedures of sampling and counting are same as those described on No. 5 of this publication series.

The 13th nuclear test of the People's Republic of China was carried out on 7th January, 1972. It is believed that the test area is the neighborhood of Lake Lop Nor (40°N, 90°E), about 4000 km west-northwest of Tokyo.

In Japan abnormal microbarographic disturbance which was caused by the nuclear test was not observed, therefore the magnitude of this explosion may have been in low energy range.

The data of gross Beta-radioactivity for 8th–14th January, 1972 are shown in table and . The levels of radioactivity in rain showed some departure from those normal conditions at several stations during the period of 12th–14th. At Osaka radioactivity in airborne dust showed slight increase on 13th.

It is estimated from the air mass trajectry that the radioactive debries emitted into the troposphere over Japan one day and a half after the explosion through an altitude of about 10 km (300mb level), as shown in Figure 11.

Table 11. Gross Beta-Radioactivity in Rain, Jan. 9–14, 1972
Compiled by N. Banno, H. Honda and H. Ueno
(Japan Meteorological Agency)

Date / Station	Jan. 1972 9	10	11	12	13	14
Wakkanai	–	–	–	–	–	–
Sapporo	–	–	–	0.6 5.0	0.6 9.0	–
Kushiro	–	–	–	0.0 0.0	1.3 2.6	–
Sendai	–	–	–	0.5 10.0	0.1 0.9	0.1 0.3
Akita	0.0 0.0	–	–	–	1.2 19.0	1.2 4.8
Tokyo	–	–	0.0 0.0	0.8 60.0	1.1 3.9	–
Wajima	–	–	–	0.7 3.0	0.6 5.0	1.8 7.2
Hachijojima	–	–	0.0 0.0	0.0 0.0	0.0 0.0	0.7 20.0
Osaka	–	–	0.0 0.0	0.0 0.0	–	–
Yonago	–	–	0.0 0.0	0.0 0.0	0.2 0.2	–
Murotomisaki	–	–	0.0 0.0	0.0 0.0	–	–
Fukuoka	–	–	0.0 0.0	0.0 0.0	0.6 4.0	–
Kagoshima	–	0.0 0.0	0.0 0.0	0.0 0.0	–	–

– : Observation is not carried out because the daily rainfall amount is less than 1mm.

Table 12. Gross Beta-Radioactivity in Dust. Jan. 8–14, 1972
Compiled by N. Banno, H. Honda and H. Ueno
(Japan Meteorological Agency)

(pCi/m^3)

Station \ Date	Jan. 1972 8	9	10	11	12	13	14
Sapporo	0.2	0.1	0.1	0.1	0.0	0.2	0.4
Sendai	0.1	0.1	0.4	0.5	0.7	0.6	0.3
Tokyo	0.4	0.6	0.5	0.7	0.4	0.4	0.3
Osaka	0.8	0.8	1.1	0.2	0.2	3.5	1.2
Fukuola	0.6	1.4	0.8	0.4	0.1	1.0	0.2

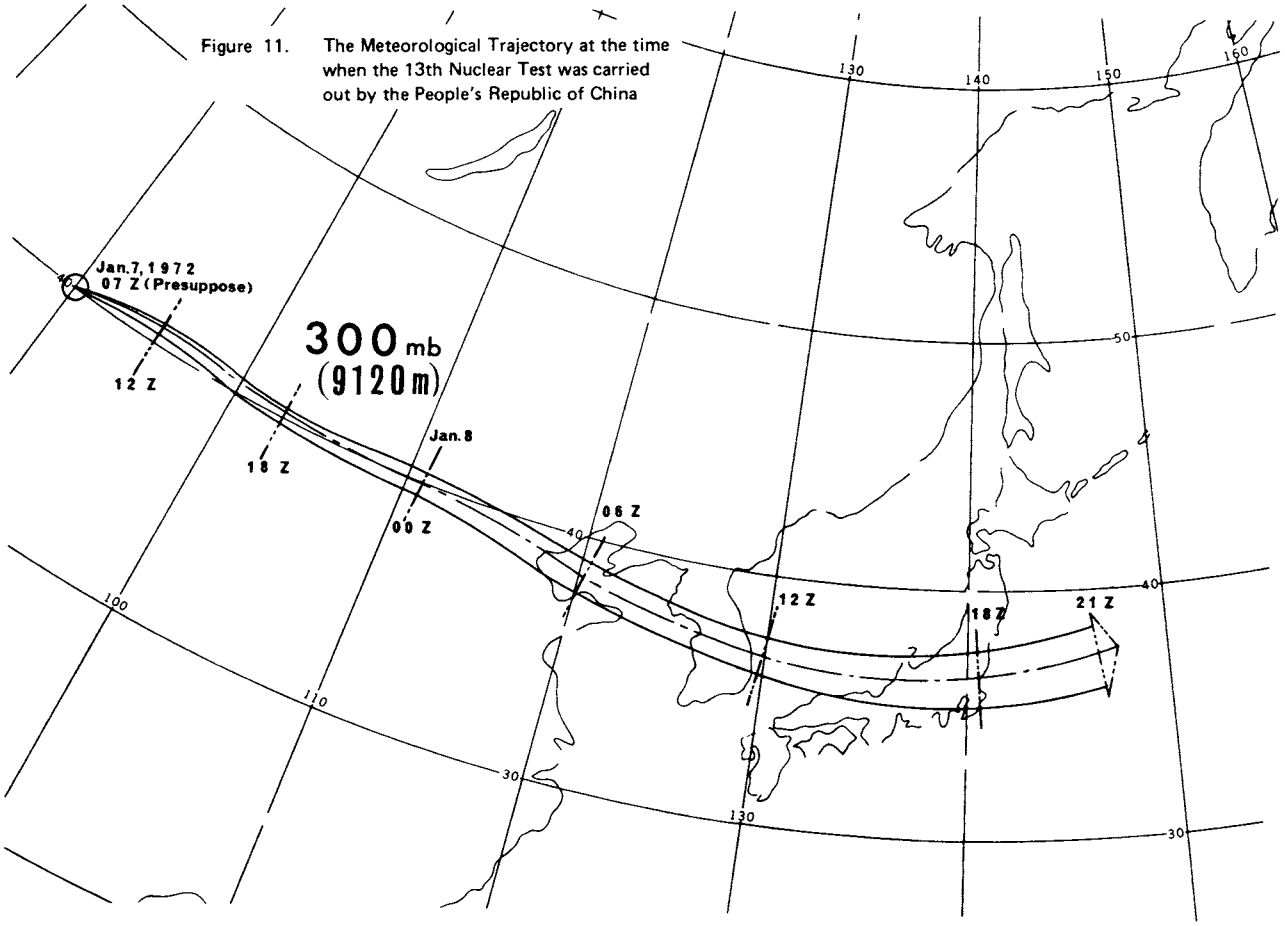


Figure 11. The Meteorological Trajectory at the time when the 13th Nuclear Test was carried out by the People's Republic of China

14th Nuclear Test

The 14th nuclear test of the People's Republic of China was carried out on 18th March, 1972. It is believed that the test area is the neighborhood of Lake Lop Nor (40°N, 90°E), about 4000 km west-northwest of Tokyo.

Slight abnormal microbarographic disturbance which was caused by the nuclear test was observed at several stations, as shown in Table 13 and Figure 13.

It is estimated from the air mass trajectory that the radioactive debries emitted into the troposphere over the northern part of Japan about 30 hours after the explosion through an altitude of about 10 km (300mb level), as shown in Figure 12.

The data of gross beta-radioactivity for 19th–25th March, 1972 are shown in Table 14 and 15. The radioactivity in rain not showed any departure from those normal conditions except the value of 3.2pCi per cc that was observed at Sapporo on 24th. At Osaka radioactivity in airborne dust showed slight increase on 23rd.

Table 13. The Microbarographic Disturbances due to the 14th Nuclear Test of the People's Republic of China, 18th March, 1972
Compiled by N. Banno, T. Honda and H. Ueno
(Japan Meteorological Agency)

Station		Time (G.M.T.)	Amplitude (mb)	Period (min)	Duration (min)
Wakkanai	(N 45°25', E 141°41')	?	¾	?	?
Kushiro	(N 42°59', E 144°24')	09:50	0.1	?	15
Akita	(N 39°43', E 140°06')	09:36	0.0	1	13
Wajima	(N 37°23', E 136°54')	09:26	?	?	12
Tokyo	(N 35°41', E 139°46')	?	?	?	?
Yonago	(N 35°26', E 133°21')	09:17	0.1	?	12
Murotomisakai	(N 33°15', E 134°11')	–	–	–	–
Kagoshima	(N 31°34', E 130°33')	?	?	?	?

?: obscre

Table 14. Gross Beta-Radioactivity in Dust, 19th–25th March, 1972
Compiled by N. Banno, H. Honda and H. Ueno
(Japan Meteorological Agency)

Date / Station	Mar. 1972 12	20	21	22	23	24	25
Sapporo	0.2	0.3	0.1	0.2	0.1	0.2	0.2
Sendai	0.2	0.3	0.1	0.1	0.4	0.1	0.2
Tokyo	0.4	0.1	0.2	0.2	0.6	0.1	–
Osaka	0.6	0.5	0.2	0.7	2.2	0.2	0.7
Fukuoka	0.7	0.0	0.1	0.1	0.4	0.1	0.1

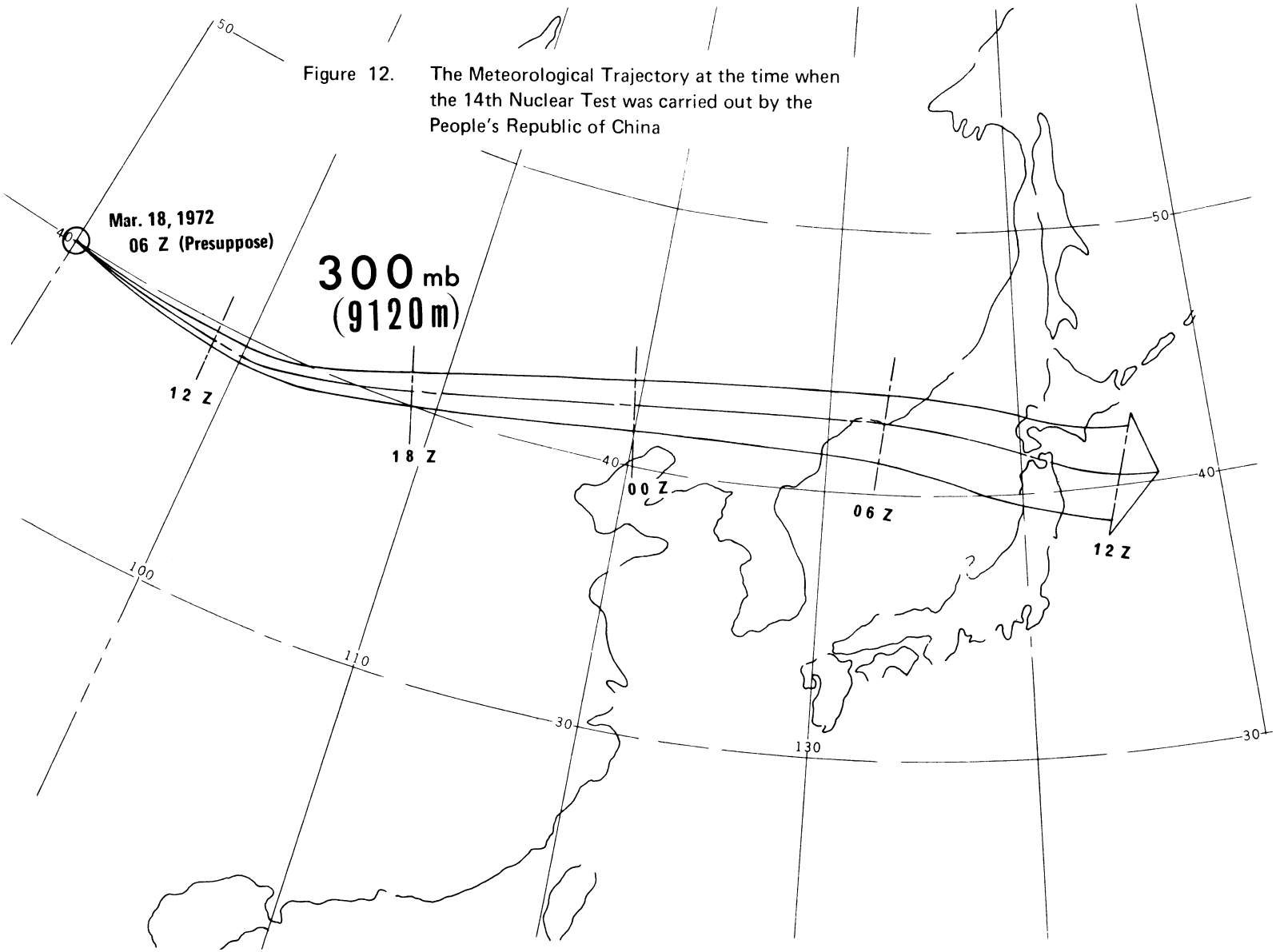
Table 15. Gross Beta-Radioactivity in Rain, 20th–25th March, 1972
Compiled by N. Banno, H. Honda and H. Ueno
(Japan Meteorological Agency)

Upper row: Concentration (pCi/cc)
Lower row: Deposition (mCi/km)

Station \ Date	Mar. 1972 20	21	22	23	24	25
Wakkanai	–	–	–	–	0.0 0.0	–
Sapporo	–	0.3 4.0	–	–	3.2 6.4	–
Kushiro	–	0.1 3.0	–	–	–	–
Sendai	0.0 0.0	0.0 0.0	–	–	–	–
Akita	0.0 0.0	0.0 0.0	–	–	0.0 0.0	–
Tokyo	0.1 0.3	0.0 0.0	–	–	–	0.0 0.0
Wajima	0.0 0.0	0.0 0.0	–	–	0.1 5.0	–
Hachijojima	–	0.1 1.0	0.1 0.5	–	–	0.1 3.0
Osaka	0.0 0.0	0.1 1.0	–	–	0.0 0.0	–
Yonago	0.0 0.0	0.0 0.0	–	–	0.0 0.0	–
Murotomisaki	0.0 0.0	0.0 0.0	–	–	0.0 0.0	0.0 0.0
Fukuoka	0.1 2.0	0.0 0.0	–	–	0.0 0.0	–
Kagoshima	0.1 0.1	0.1 0.0	–	–	0.0 0.0	–

– : Observation is not carried out because the daily rainfall amount is less than 1mm.

Figure 12. The Meteorological Trajectory at the time when the 14th Nuclear Test was carried out by the People's Republic of China



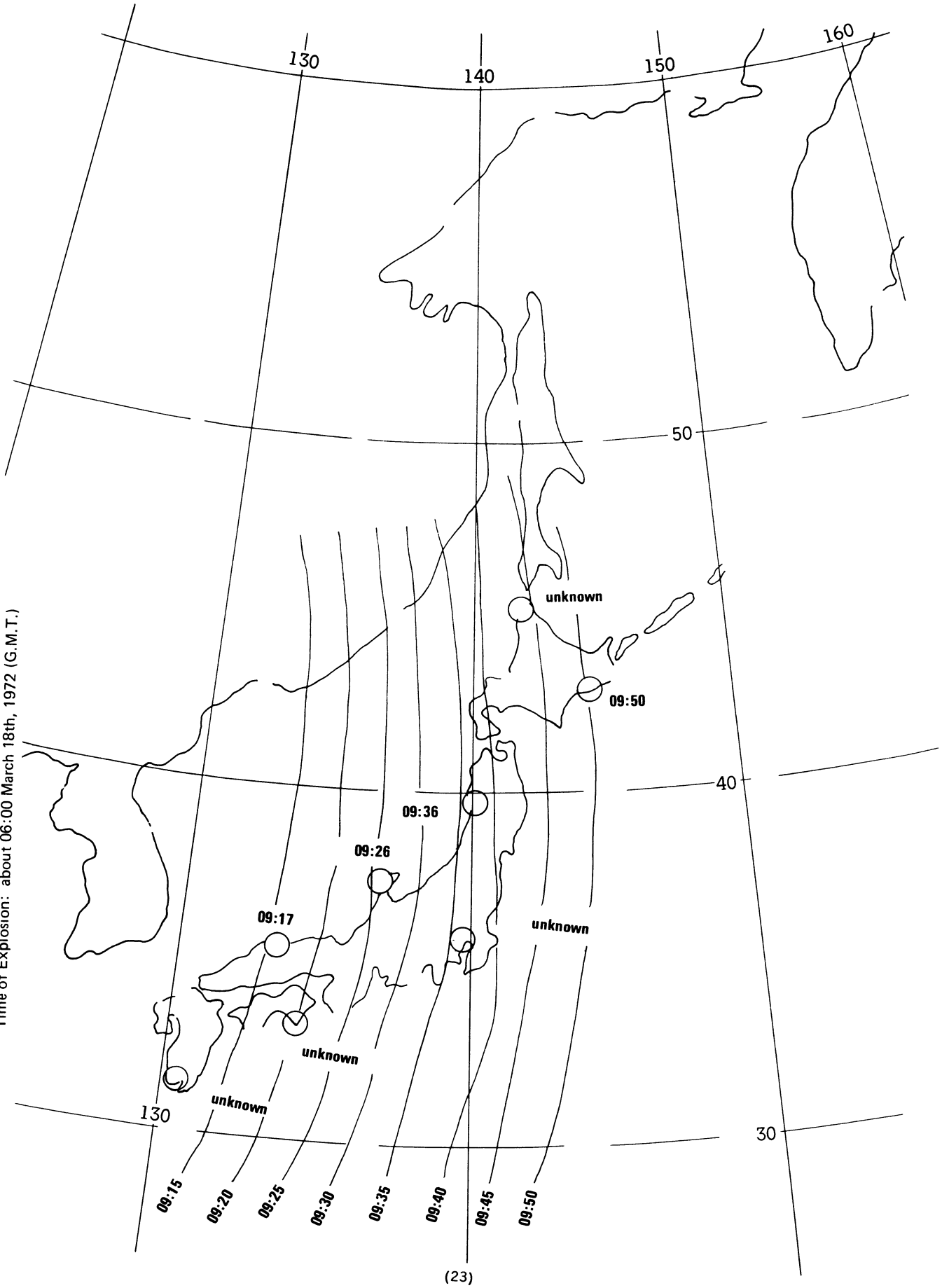


Figure 13. Test Site: the Neighborhood of Lake Lop Nor (40°N 90°E)
Time of Explosion: about 06:00 March 18th, 1972 (G.M.T.)

Figure 14. Fallout Observation Network of Japan Meteorological Agency