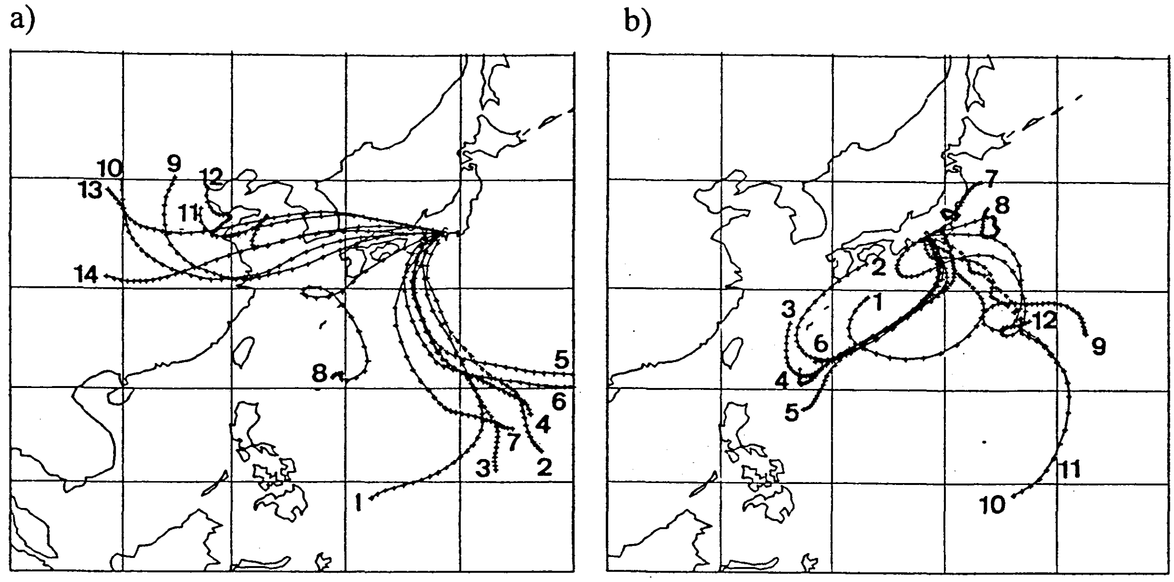

Fig. 95-16 Back trajectory analyses for air sampled on Mt. Fuji.
a) July 27 to August 2, 1993: 1: July 27, 9:00 (local time); 2: July 27, 21:00; 3: July 28, 9:00; 4: July 28, 21:00; 5: July 29, 9:00; 6: July 29, 21:00; 7: July 30, 9:00; 8: July 30, 21:00; 9: July 31, 9:00; 10: July 31, 21:00; 11; August 1, 9:00; 12: August 1, 21:00; 13: August 2, 9:00; 14: August 2, 21:00;
b) July 25 to 30, 1994: 1: July 25, 9:00; 2: July 25, 21:00; 3: July 26, 9:00; 4: July 26, 21:00; 5: July 27, 9:00; 6: July 27, 21:00; 7: July 28, 9:00; 8: July 28, 21:00; 9: July 29, 9:00; 10: July 29, 21:00; 11: July 30, 9:00; 12: July 30, 21:00.
Each small tick on the line indicates 6 hours.
Reprinted from *Water, Air and Soil Pollution*, **85** (1995), 1967-1972, Acid deposition at the summit of Mt. Fuji: Observations of gases, aerosols and precipitation in summer, 1993 and 1994, Dokiya *et al.*, fig 3 (©1995 Kluwer Academic Publishers. Printed in the Netherlands.) with kind permission from Kluwer Academic Publishers.

IODINE

6. Iodine Determination in Natural and Tap Water Using Inductively Coupled Plasma Mass Spectrometry

Takaku, Shimamura, Masuda, and Igarashi (1995)

Takaku *et al.* (1995) examined the feasibility of iodine determination in natural and tap water, using inductively coupled plasma mass spectrometry (ICP-MS) to investigate the environmental behavior of iodine from the viewpoint of health science and public hygiene. Iodine is essential to the body, mainly the thyroid gland, and plays an important role in metabolism. It is also important to trace radioactive iodine (^{129}I, ^{131}I, ^{133}I, etc.) released to the environment from nuclear power plants and nuclear test sites.

Because iodine concentrations in environmental samples are usually very low, it is difficult to make a direct analysis by the traditional methods without preconcentration. Because iodine is highly volatile, however, the chemical yield of iodine during preconcentration is both low and variable. It is preferable to conduct direct analysis without preconcentration.

Takaku *et al.* (1995) easily determined iodine by ICP-MS without separation or preconcentration. The detection limit was 10 pg/ml. They obtained a stable iodine determination by addinig an organic alkali to samples just before analysis to suppress iodine vaporization. They determined the iodine concentration of 42 natural water samples in the northern Kanto area, Japan (Fig. 95-17). The concentrations of iodine ranged from 0.65 to 35.9 ng/ml (Table 95-9).

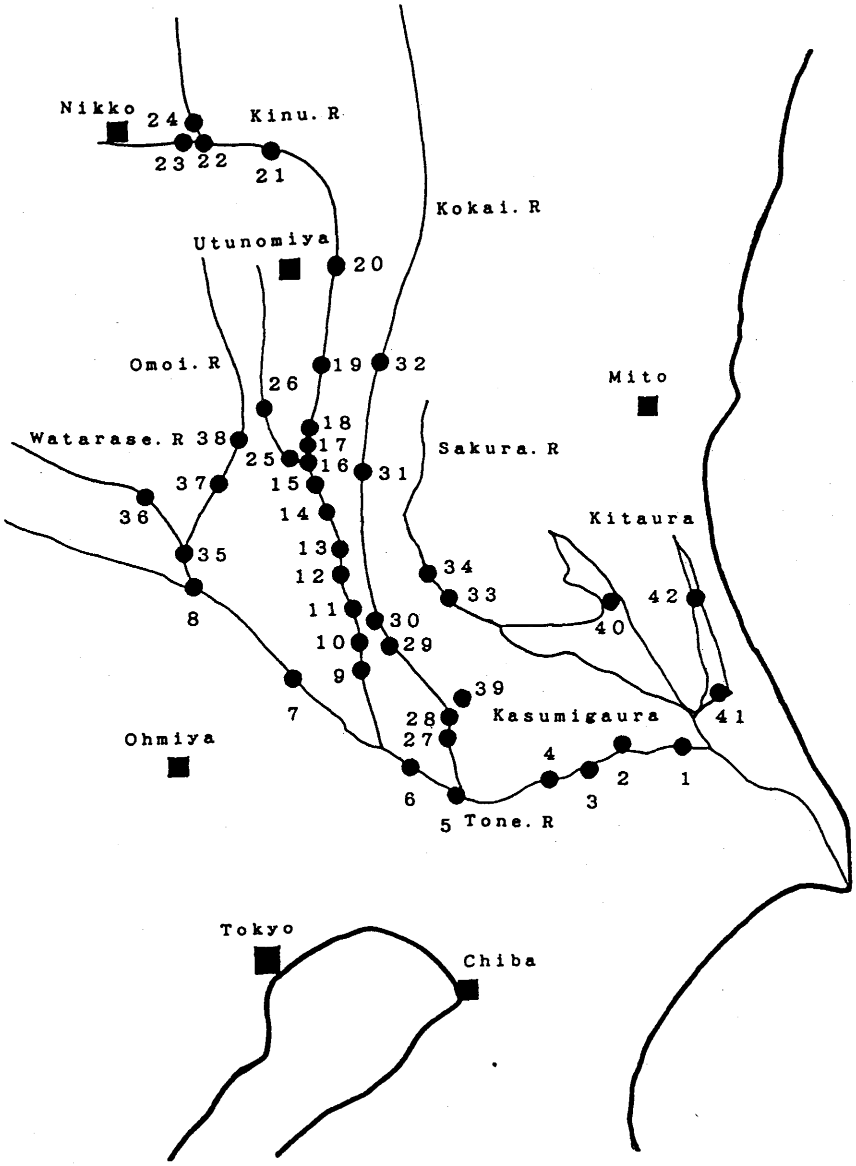

Fig. 95-17 River and lakewater sampling points.

Table 95-9 Concentrations of I in river- and lake-water samples

Name of river	Sample point City	Sample point Place	EC/ $\mu S\ cm^{-1}$	pH	Cl^-, ppm	NO_3-N, ppm	SO_4-S, ppm	I, ppb	
1 Tone	Sahara	Suigou-ohashi	311	7.4	46.2	2.4	10.5	35.9	±0.2
2	Kanzaki	Kanzaki-ohashi	285	7.5	38.7	2.2	9.9	28.6	0.5
3	Shintone	Jyousou-ohashi	270	7.4	30.7	2.3	10.2	20.0	0.2
4	Kawachi	Nagatomi-hashi	238	7.4	21.9	2.4	10.9	8.2	0.1
5	Abiko	Sakae-hashi	223	7.5	19.1	2.1	10.6	7.9	0.1
6	Toride	Tone-ohashi	230	7.4	19.3	2.2	11.5	8.4	0.3
7	Iwai	Mebuki-ohashi	254	7.3	23.6	2.4	13.7	11.3	0.1
8	Koga	Tonegawa-hashi	235	7.3	23.8	2.2	12.7	9.4	0.2
9 Kinu	Mitsukaidou	Housui-hashi	178	7.0	11.4	1.7	8.6	4.04	0.04
10	Mitsukaidou	Mituma-hashi	163	7.4	9.2	1.4	7.7	2.77	0.06
11	Moriya	Tamadai-hashi	166	7.5	10.3	1.4	8.0	3.30	0.01
12	Ishige	Ishige-hashi	154	7.4	8.6	1.2	7.1	2.46	0.02
13	Chiyokawa	Ogata-hashi	157	7.4	9.5	1.3	7.2	2.54	0.05
14	Shimotsuma	Kinugawa-hashi	159	7.5	9.7	1.3	7.6	2.49	0.09
15	Sekijyou	Komashiro-hashi	162	7.5	10.1	1.2	7.9	2.42	0.03
16	Shimodate	Funadama-hashi	151	7.5	8.9	1.1	6.9	2.43	0.07
17	Shimodate	Kawashima-hashi	141	7.8	8.7	1.1	6.8	2.44	0.05
18	Shimodate	Nakajima-hashi	143	7.9	8.3	1.0	6.5	2.34	0.06
19	Ninomiya	Daidousen-hashi	110	8.7	6.0	0.63	4.2	1.56	0.04
20	Mouka	Miyaoka-hashi	108	8.7	6.8	0.55	4.4	1.80	0.05
21	Utsunomiya	Yanagida-hashi	93	8.8	4.7	0.4	3.8	1.76	0.04
22	Shioya	Kamihira-hashi	120	8.4	5.4	0.89	4.2	1.55	0.09
23	Shioya	Onami-hashi	75	8.1	2.7	0.36	3.3	1.12	0.02
24 Daiya	Imaichi	Kaishin-hashi	117	7.8	4.3	0.46	5.7	2.25	0.03
25 Ta	Yuuki	Shin-tagawa-hashi	298	7.3	22.7	3.1	16.0	3.66	0.05
26	Oyama	Funato-hashi	281	7.6	17.5	2.3	17.9	5.14	0.09
27 Kokai	Fujishiro	Kokaigawa-ohashi	221	7.4	16.8	2.3	8.7	5.10	0.05
28	Yawahara	Yamato-hashi	227	7.4	17.6	2.5	10.1	4.61	0.05
29	Mitsukaidou	Fukurai-hashi	222	7.4	16.3	2.2	9.3	4.2	0.15
30	Shimotsuma	Iwai-hashi	207	7.7	17.8	2.1	8.9	4.45	0.02
31	Shimodate	Ishida-hashi	199	8.5	15.8	2.0	7.4	3.88	0.02
32	Mouka	Inonai-hashi	167	9.1	11.8	1.4	6.2	2.50	0.06
33 Sakura	Tsukuba	Ota-hashi	205	7.4	19.3	1.9	9.1	6.2	0.36
34	Tsukuba	Jyunmi-hashi	171	7.6	18.2	1.9	8.6	5.9	0.23
34 Watarase	Koga	Mikuni-hashi	225	7.2	17.9	2.3	11.0	4.4	0.11
36	Fujioka	Fujioka-ohashi	273	7.6	29.6	1.7	17.0	4.76	0.09
37 Omoi	Oyama	Kuromoto-hashi	143	8.5	10.3	3.5	4.6	0.65	0.09
38	Oyama	Amito-hashi	192	8.3	16.0	3.2	7.1	2.05	0.05
39 Ushikunuma	Ryugasaki	Sanuki	211	9.0	21.7	1.7	7.4	3.04	0.07
40 Kasumigaura	Dejima	Kasumigaura-ohashi	259	8.5	37.5	0.26	8.1	4.4	0.2
41 Kitaura	Itako	Jingu-hashi	405	8.4	80.9	—	8.4	5.3	0.27
42	Taiyou	Kagyou-hashi	243	7.8	31.5	2.2	6.5	2.4	0.24