

Table 4.2-1 Detection of radioactive cesium in river sediment samples (by fiscal year)

Prefecture	FY2011				FY2012				FY2013				FY2014				Total			
	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)
Yamagata	2	2	100.0	34 - 470	0	0	-	-	0	0	-	-	0	0	-	-	2	2	100.0	34 - 470
Miyagi	24	24	100.0	31 - 3,000	58	57	98.3	ND - 9,700	76	76	100.0	18 - 4,200	75	74	98.7	ND - 2,220	233	231	99.1	ND - 9,700
Fukushima	147	141	95.9	ND - 260,000	389	386	99.2	ND - 780,000	501	499	99.6	ND - 460,000	501	496	99.0	ND - 297,000	1,538	1,522	99.0	ND - 780,000
Hamadori Area	62	62	100.0	45 - 260,000	201	201	100.0	42 - 780,000	239	239	100.0	68 - 460,000	243	243	100.0	18 - 297,000	745	745	100.0	18 - 780,000
Nakadori Area	42	41	97.6	ND - 35,000	58	58	100.0	63 - 24,900	77	77	100.0	68 - 11,100	76	74	97.4	ND - 10,900	253	250	98.8	ND - 35,000
Aizu	43	38	88.4	ND - 2,020	130	127	97.7	ND - 10,200	185	183	98.9	ND - 13,400	182	179	98.4	ND - 7,800	540	527	97.6	ND - 13,400
Ibaraki	24	24	100.0	37 - 1,840	48	48	100.0	93 - 1,300	76	75	98.7	ND - 5,400	76	75	98.7	ND - 3,170	224	222	99.1	ND - 5,400
Tochigi	12	10	83.3	ND - 6,700	27	27	100.0	11 - 4,100	31	31	100.0	106 - 5,100	32	32	100.0	134 - 8,700	102	100	98.0	ND - 8,700
Gunma	26	22	84.6	ND - 4,600	72	72	100.0	16 - 4,100	95	95	100.0	21 - 4,300	94	94	100.0	38 - 5,100	287	283	98.6	ND - 5,100
Chiba	16	16	100.0	440 - 7,400	32	32	100.0	460 - 8,200	32	32	100.0	151 - 5,700	32	32	100.0	121 - 5,700	112	112	100.0	121 - 8,200
Total	251	239	95.2	ND - 260,000	626	622	99.4	ND - 780,000	811	808	99.6	ND - 460,000	810	803	99.1	ND - 297,000	2,498	2,472	99.0	ND - 780,000

■ 10 Bq/kg or less ■ 10 to 100 Bq/kg or less ■ 100 to 1,000 Bq/kg or less ■ 1,000 to 10,000 Bq/kg or less ■ 10,000 to 100,000 Bq/kg or less ■ 100,000 to 1,000,000 Bq/kg or less

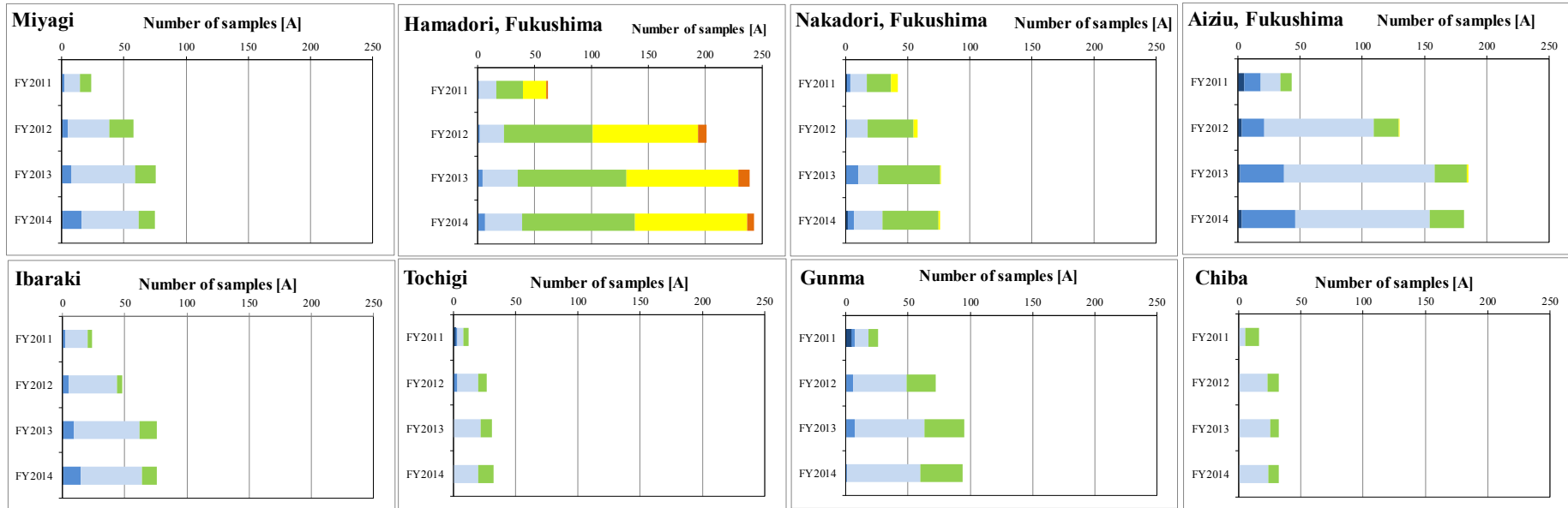


Figure 4.2-1 Detection of radioactive materials in river sediment samples (changes) (Prefectures where only a small number of samples were collected are omitted.)

Table 4.2-2 Detection of radioactive cesium in lake sediment samples (by fiscal year)

Prefecture	FY2011				FY2012				FY2013				FY2014				Total			
	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)
Iwate	18	18	100.0	62 - 990	64	63	98.4	ND - 1,040	80	71	88.8	ND - 340	80	68	85.0	ND - 301	242	220	90.9	ND - 1,040
Yamagata	10	6	60.0	ND - 132	0	0	-	-	0	0	-	-	0	0	-	-	10	6	60.0	ND - 132
Miyagi	113	111	98.2	ND - 11,100	199	191	96.0	ND - 3,700	192	182	94.8	ND - 2,450	196	187	95.4	ND - 1,620	700	671	95.9	ND - 11,100
Fukushima	441	421	95.5	ND - 92,000	847	808	95.4	ND - 165,000	795	750	94.3	ND - 45,000	770	724	94.0	ND - 24,700	2853	2703	94.7	ND - 165,000
Hamadori Area	192	191	99.5	ND - 92,000	336	329	97.9	ND - 165,000	325	321	98.8	ND - 45,000	326	318	97.5	ND - 24,700	1179	1159	98.3	ND - 165,000
Nakadori Area	176	174	98.9	ND - 30,000	354	353	99.7	ND - 20,000	316	316	100.0	10 - 8,300	324	317	97.8	ND - 3,060	1170	1160	99.1	ND - 30,000
Aizu	73	56	76.7	ND - 25,000	157	126	80.3	ND - 2,590	154	113	73.4	ND - 1,410	120	89	74.2	ND - 720	504	384	76.2	ND - 25,000
Ibaraki	128	125	97.7	ND - 5,800	214	208	97.2	ND - 4,800	212	209	98.6	ND - 4,200	212	208	98.1	ND - 1,640	766	750	97.9	ND - 5,800
Tochigi	159	150	94.3	ND - 4,900	275	267	97.1	ND - 1,780	276	245	88.8	ND - 1,540	274	231	84.3	ND - 820	984	893	90.8	ND - 4,900
Gunma	88	74	84.1	ND - 410	211	184	87.2	ND - 1,560	214	179	83.6	ND - 1,560	210	177	84.3	ND - 2,160	723	614	84.9	ND - 2,160
Saitama	2	2	100.0	35 - 530	8	8	100.0	12 - 540	8	8	100.0	10 - 67	8	7	87.5	ND - 68	26	25	96.2	ND - 540
Chiba	83	83	100.0	50 - 9,700	199	199	100.0	17 - 20,200	200	199	99.5	ND - 7,900	200	200	100.0	11 - 5,200	682	681	99.9	ND - 20,200
Tokyo	2	2	100.0	580 - 700	12	12	100.0	131 - 670	8	8	100.0	75 - 460	8	8	100.0	96 - 430	30	30	100.0	75 - 700
Total	1044	992	95.0	ND - 92,000	2029	1940	95.6	ND - 165,000	1985	1851	93.2	ND - 45,000	1958	1810	92.4	ND - 24,700	7016	6393	94.0	ND - 165,000

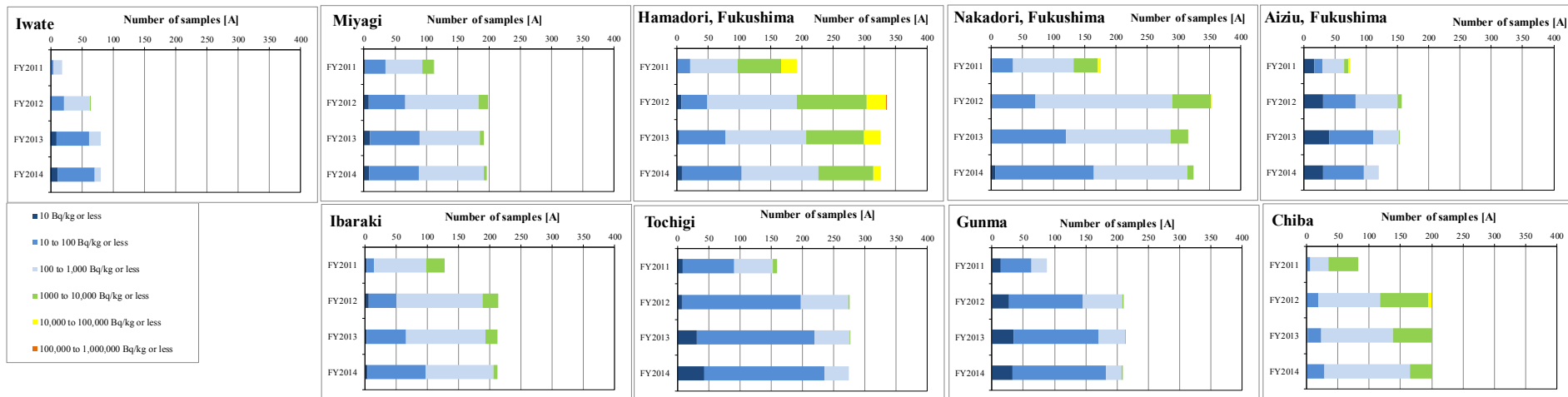


Figure 4.2-2 Detection of radioactive cesium in lake sediment samples (changes) (Prefectures where only a small number of samples were collected are omitted.)

Table 4.2-3 Detection of radioactive cesium in coastal area sediment samples (by fiscal year)

Prefecture	FY2011				FY2012				FY2013				FY2014				Total			
	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values (Bq/L)
Iwate	3	0	0.0	ND - 0	4	2	50.0	ND - 39	4	2	50.0	ND - 46	4	2	50.0	ND - 16	15	6	40.0	ND - 46
Miyagi	52	34	65.4	ND - 830	48	38	79.2	ND - 1,530	51	47	92.2	ND - 2,040	52	42	80.8	ND - 1,090	203	161	79.3	ND - 2,040
Fukushima	80	77	96.3	ND - 1,240	97	93	95.9	ND - 1,110	150	145	96.7	ND - 1,600	150	139	92.7	ND - 830	477	454	95.2	ND - 1,600
Ibaraki	28	27	96.4	ND - 230	31	17	54.8	ND - 69	20	11	55.0	ND - 67	20	11	55.0	ND - 67	99	66	66.7	ND - 230
Chiba	0	0	-	-	31	20	64.5	ND - 134	23	14	60.9	ND - 54	23	14	60.9	ND - 21	77	48	62.3	ND - 134
Tokyo	0	0	-	-	19	17	89.5	ND - 780	18	18	100.0	12 - 780	18	17	94.4	ND - 630	55	52	94.5	ND - 780
Total	163	138	84.7	ND - 1,240	230	187	81.3	ND - 1,530	266	237	89.1	ND - 2,040	267	225	84.3	ND - 1,090	926	787	85.0	ND - 2,040

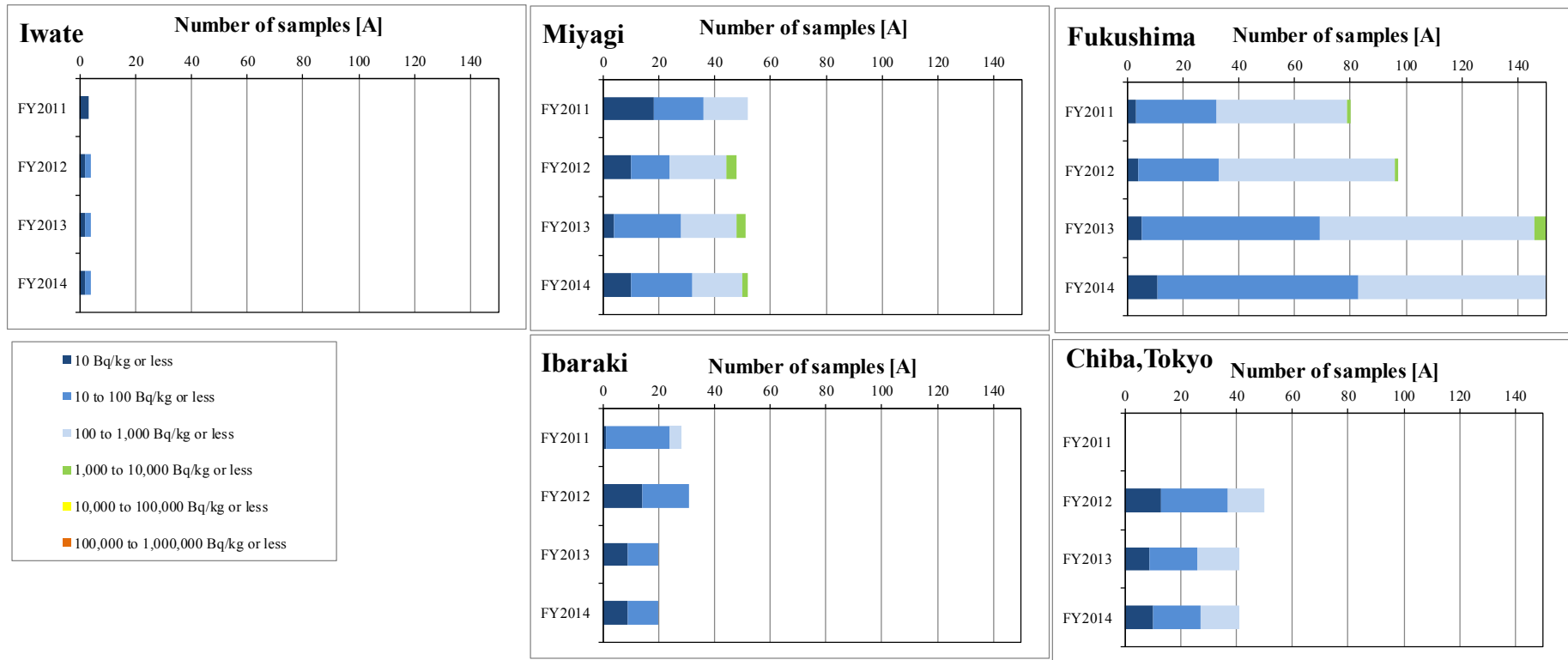


Figure 4.2-3 Detection of radioactive cesium in coastal area sediment samples (changes) (Prefectures where only a small number of samples were collected are omitted.)

4.3 Detection of radioactive materials in sediments by location

(1) Evaluation policy

Circumstances where radioactive materials were detected were compiled more in detail by sampling location, while separately considering the property of rivers, lakes and coastal areas.

Circumstances for each location were statistically analyzed from the following two perspectives by using all available data for each location. The evaluation excluded Yamagata prefecture, where surveys have not been conducted since FY2012.

1) Detected concentration levels

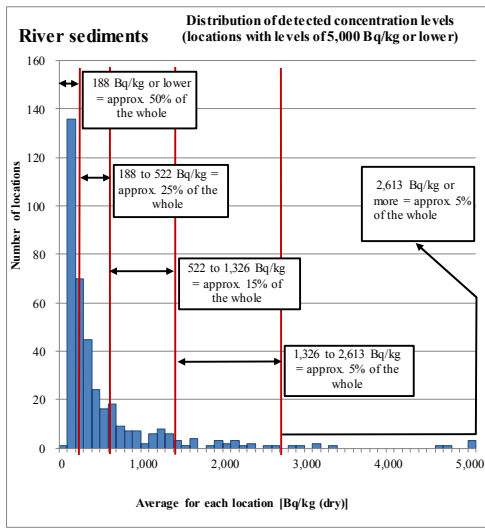
- i. Obtain the average for each location by using all survey results concerning concentrations of radioactive cesium (the total of Cs-134 and Cs-137) (arithmetic average calculated by assuming ND to be zero; hereinafter referred to as the “average for each location”).
- ii. Arrange all such averages (separately for samples from rivers, lakes, and coastal areas) in descending order and set the following five categories depending on upper percentile ranges (see Figure 4.3-1).
 - Category A: Upper 5 percentile of the entirety
 - Category B: Upper 5 to 10 percentile of the entirety
 - Category C: Upper 10 to 25 percentile of the entirety
 - Category D: Upper 25 to 50 percentile of the entirety
 - Category E: Upper 50 to 100 percentile of the entirety (lower 50 percentile)

(Incidentally, a comparison between the average and the maximum value for each location revealed a good correlation between them (see right below of Figure 4.3-1). Therefore, considering that the evaluation of the average for each location covers that of large detected values (maximum values) that emerge occasionally, the evaluation was conducted by using only the average for each location.)

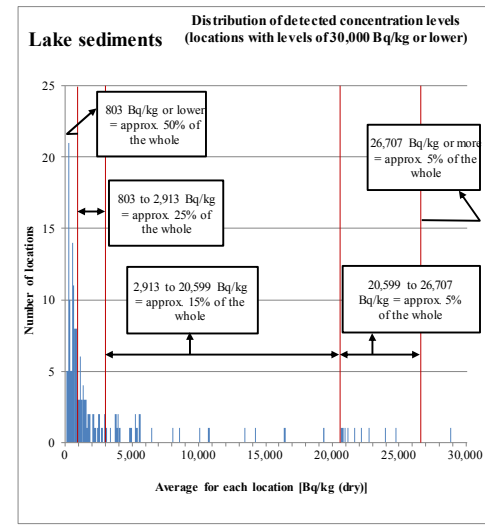
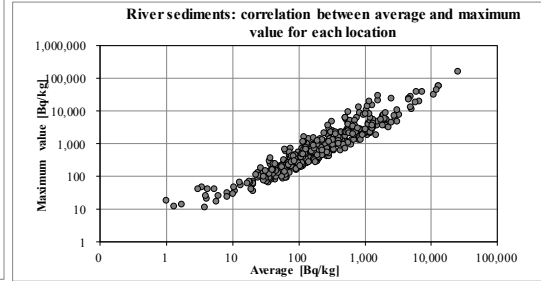
2) Changes in detected values

- i. Changes in detected values were categorized based on the following thinking in order to evaluate their changes over the years.
 - (i) Based on visual judgment of graphs that show changes in detected values over the years for each location, those negatively sloped are judged as “decreasing” and those positively sloped are judged as “increasing.”
 - (ii) When visual judgment is difficult, a regression analysis is conducted to check the trend. Specifically, when the lower and upper 95% of the slope are both negative, it is judged as “decreasing,” and when the lower and upper 95% of the slope are both positive, it is judged as “increasing.”
 - (iii) When neither a decreasing nor an increasing trend is clear (either the lower or upper 95% of the slope is negative and the other is positive), when a coefficient of variation (sample standard deviation/average) is less than 0.5, it is judged as “unchanged,” and when a coefficient of variation is 0.5 or higher, it is judged as “varying.”
- ii. However, data may show fluctuations, depending on minor differences in sampling points or properties of

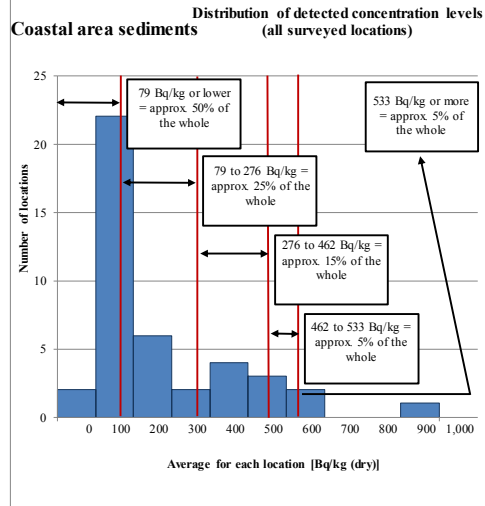
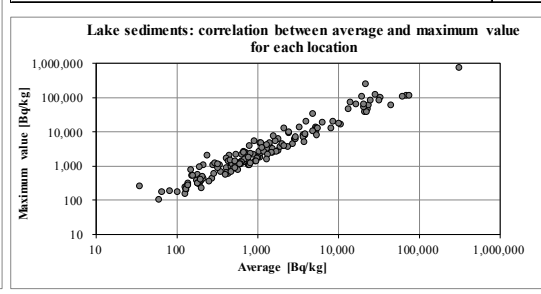
samples, and it is considered to be too early to make judgments on changes in detected values at this point in time. Even if a certain location is judged to show an increasing trend based on the abovementioned thinking, it is necessary to accumulate further data and conduct careful examination for making a judgment on whether the increasing trend will be continuously observed in the relevant location.



Category	Percentile	Range [River sediments] [Bq/kg (dry)]	Number of locations	Same as on the left [%]
A	Upper 5 percentile	2,613 or more	19	4.8
B	Upper 5 to 10 percentile	1,326 - 2,613	20	5.1
C	Upper 10 to 25 percentile	522 - 1,326	60	15.2
D	Upper 25 to 50 percentile	188 - 522	99	25.0
E	Lower 50 percentile	188 or less	198	50.0
Total			396	100.0



Category	Percentile	Range [Lake sediments] [Bq/kg (dry)]	Number of locations	Same as on the left [%]
A	Upper 5 percentile	26,707 or more	8	4.9
B	Upper 5 to 10 percentile	20,599 - 26,707	8	4.9
C	Upper 10 to 25 percentile	2,913 - 20,599	25	15.2
D	Upper 25 to 50 percentile	803 - 2,913	41	25.0
E	Lower 50 percentile	803 or less	82	50.0
Total			164	100.0



Category	Percentile	Range [Coastal area sediments] [Bq/kg (dry)]	Number of locations	Same as on the left [%]
A	Upper 5 percentile	533 or more	2	4.8
B	Upper 5 to 10 percentile	462 - 533	2	4.8
C	Upper 10 to 25 percentile	276 - 462	6	14.3
D	Upper 25 to 50 percentile	79 - 276	10	23.8
E	Lower 50 percentile	79 or less	22	52.4
Total			42	100.0

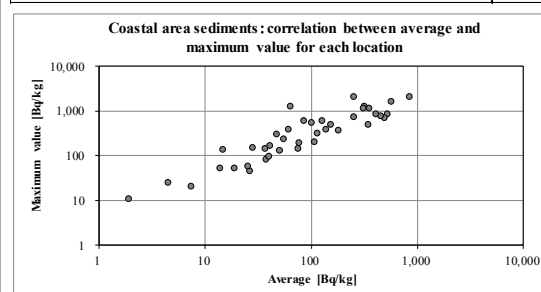


Figure 4.3-1 Categories based on the average for each location (left: picture showing means of categorization; upper right: results of categorization¹¹; lower right correlation between average and maximum value for each location)

¹¹ Setting of boundary values: The average of the minimum value of the upper category and the maximum value of the lower category is adopted as the boundary value between the relevant upper category and lower category.

(2) Concentration levels in sediment samples from rivers, lakes, and coastal areas and their changes by prefecture

(2)-1 Rivers

1) Iwate Prefecture

In Iwate Prefecture, surveys were conducted 7 to 13 times from December 2011 to February 2015 for river sediment samples collected at 22 locations (this analysis excludes the survey results at one location where the survey was conducted only in 2011).

Regarding concentration levels of detected values, two locations were categorized into Category D and 20 locations were categorized into Category E (see Table 4.3-1 and Table 4.3-2).

Concentration levels were generally decreasing at 17 locations but were generally unchanged or varying at five locations.

Table 4.3-1 Categorization of detected values at respective locations (Iwate Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	2	No.3, No.16
E	Lower than upper 25 to 50 percentile (lower 50%)	20	No. 1, No.2, No.4, No.5, No.6, No.7, No.8, No.9, No.10, No.11, No.12, No.13, No.14, No.15, No.17, No.18, No.19, No.20, No.21, No.22

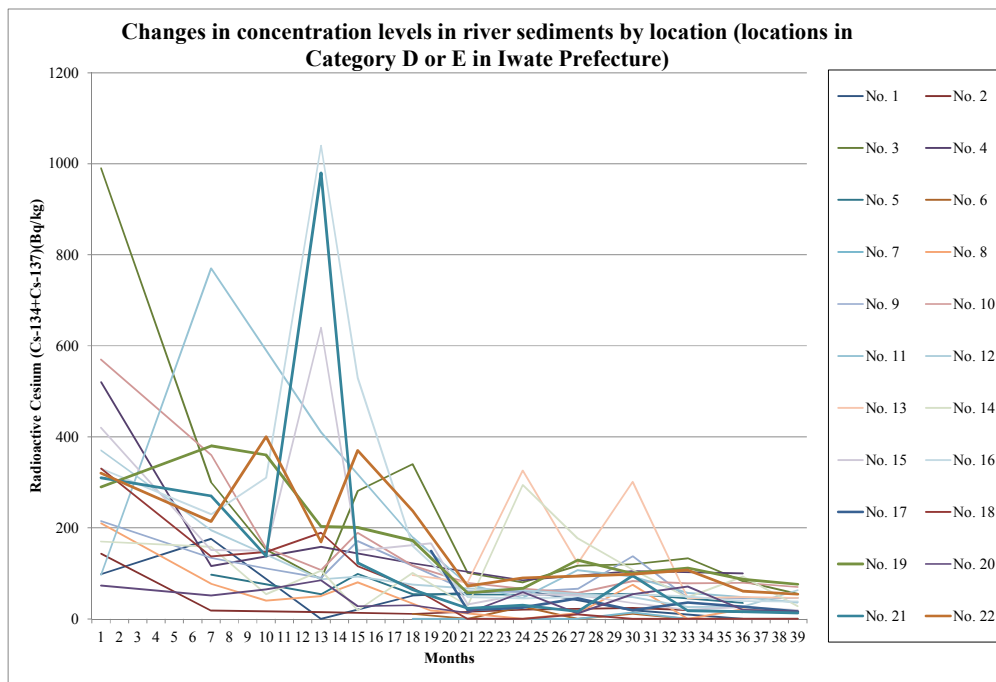


Figure 4.3-2 Changes in concentration levels over the years at respective locations (Iwate Prefecture: river sediments)

2) Miyagi Prefecture

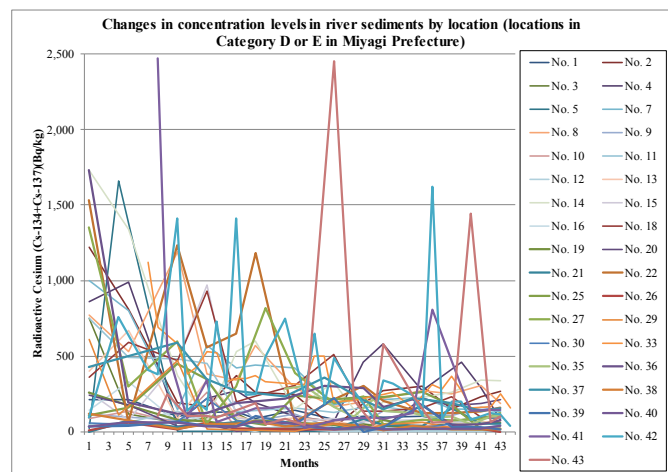
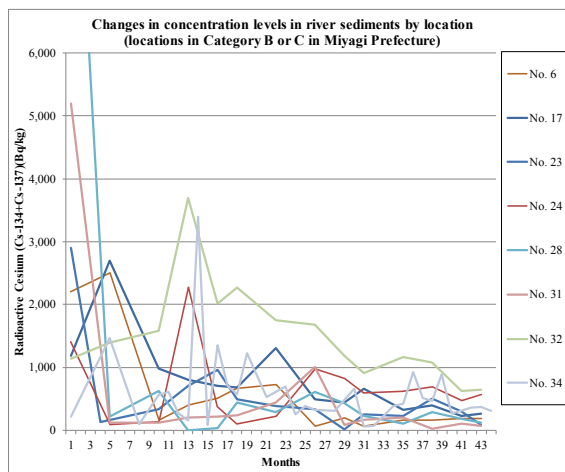
In Miyagi Prefecture, surveys were conducted 12 to 33 times from October 2011 to February 2015 for river sediment samples collected at 43 locations (this analysis excludes the survey results at 37 locations where the survey was conducted only in 2011).

Regarding concentration levels of detected values, one location was categorized into Category B, seven locations into Category C, 15 locations into Category D, and 20 locations into Category E (see Table 4.3-3 and Table 4.3-4).

Concentration levels were generally decreasing at 34 locations but were generally unchanged or varying at nine locations.

Table 4.3-3 Categorization of detected values at respective locations (Miyagi Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	1	No.32
C	Upper 10 to 25 percentile	7	No.6, No.17, No.23, No.24, No.28, No.31, No.34
D	Upper 25 to 50 percentile	15	No.2, No.4, No.7, No.8, No.11, No.14, No.18, No.22, No.27, No.33, No.36, No.37, No.41, No.42, No.43
E	Lower than upper 25 to 50 percentile (lower 50%)	20	No.1, No.3, No.5, No.9, No.10, No.12, No.13, No.15, No.16, No.19, No.20, No.21, No.25, No.26, No.29, No.30, No.35, No.38, No.39, No.40



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-3 Changes in concentration levels over the years at respective locations (Miyagi Prefecture: river sediments)

Table 4.3-4 Detection of radioactive cesium at respective locations (Miyagi Prefecture: river sediments)

No.	Location			River sediments/Radioactive Cesium (Cs-134+Cs-137) Concentration(Bq/kg)(*)																														Charges	Average(*)2)	No.	Coefficient of variation	Trends(*)3)																		
	Water area	Location	Municipality	FY2011					FY2012					FY2013					FY2014																																					
				8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1						2	3																
1	Shichihori River	Kanami Bridge	Kesennuma City			210			211						100			124			128			86			139			83			99			96			93			85														
2		Nanma Bridge				1,220			810							189			165			370			262			245			28			188			268			300			150			231			265							
3	Okawa River	Tatsuyama-obashi Bridge	Kesennuma City			750			115						56			91			121			56			39			43			51			35			33			54			60			61								
4		Kanyama Bridge				860			990							59			222			271			190			99			65			460			580			269			460			288			76							
5		Okawa River Estuary					23			1,660							0			0			0			0			0			0			0			0			0			0			0			0						
6	Onose River	Onoki Bridge	Kesennuma City			2,200			2,500						159			400			510			670			730			64			194			63			158			158			185			182								
7		Atama River		Utsuda Bridge			1,000			800						146			570			420			440			420			173			229			210			225			145			131										
8	Katsuragi River	Obata Bridge	Kesennuma City			770			530						1,190			380			340			570			289			165			196			221			271			250			304			184								
9		Katsuragi River		Tone-obashi Bridge (Tone)			115			98						74			118			199			71			115			22			65			133			119			106			158			139							
10	Saihama River	Donan Bridge (Karakoma Dam)	Kesennuma City			85			137						55			260			24			20			25			13			38			45			40			33			26			22								
11		Saihama River		Kajiya River			750			490						480			450			131						153			123			161			167			124			54			98			91							
12	Hiyama River Area	Hiyama Dam, inflow area	Kesennuma City			44			60						135			56			0			14			17			0			0			0			0			0			0			10								
13		Hiyama River		Wakayama			400			670						84			340			104			65			90			71			33			52			62			55			61			72							
14	Hiyama River System	Yamashida Bridge	Tone City			1,730			1,340						370			69			530			600			150			327			68			197			225			258			339			337								
15		Hiyama River		Todoshiki Bridge (Todoshiki)			260			77						470			970			89						66			85			66			67			80			67			49			46							
16	Iai River	Shabonabashi, entrance	Iwaki City			141			330						63			104			18			0			59			37			17			17			16			18			11			0								
17		Iai River		In Furukawa District, Iwaki City			1,190			2,700						980			800			710			690			1,310			490			450			660			324			398			229			265							
18	Iai River	Idogawa Bridge	Masato Town			360			590						470			930			195			233			305			510			134			133			153			232			95			101								
19		Iai River		Okawa Bridge (Tanda)			260			172						79			66			37			73			56			41			21			79			20			19			13			18							
20	Natori River	Kadonawa	Ihnomaki City			240			175						36			49			0			10			0			27			18			26			221			171			184			212								
21		Natori River		Onobashi Bridge (Ono)			0			74						28			41			65			17			19			19			82			44			40			153			53			54							
22	Sunaoshi River	Tajigasaki War	Tajigaki City			1,530			62						1,230			560			650			1,180			61			215			302			202			122			123			132			156								
23		Sunaoshi River		Neshima Bridge			2,900			129						340			710			960			490			380			340			17			255			225			500			307			87							
24	Tsunatsugawa River (Kyu-sunatsugawa River)	Teisan Bridge	Shitagama City/Shitagama Town/Tajigaki City			1,410			95						141			2,280			380			101			218			980			820			600			620			690			470			570								
25		Nanaka River		Nanaka Bridge			109			157						450			350			71			43			238			215			230			226			264			173			20			18							
26	Nanaka River System	Fukuda-obashi Bridge	Saidai City			10			60						14			17			17			17			13			12			16			15			18			22			16			0								
27		Nanaka River		Umeda River			1,350			300						600			53			300			820			390			186			233			47			76			71			84			124							
28	Natori River	Takayago Bridge	Saidai City/Natori City			11,000			220						630			0			42			450			291			610			430			225			114			293			185			124								
29		Natori River		Yamaguchi-obashi Bridge			610			108						470			14									0			52			11			47			61			26			23			18							
30	Natori River System	Yakushi Bridge	Natori City			56			47						68			220			73						35			23			17			20			28			52			27			43								
31		Natori River		Koyama Bridge			5,200			116						124			202			221			236			450			1,010			81			168			208			21			112			74							
32	Abukuma River	Ishikawa Bridge	Marumori Town			1,140			1,390						1,590			3,700			2,020			2,270			1,750			1,680			1,190			910			1,170			1,080			630			650								
33		Abukuma River		Madama Bridge												1,120			690			580			380			430			530			520			330			350			370			330			320							
34	Abukuma River System	Marumori Bridge	Marumori Town			220			1,470						370			101			560			610			283			301			161			96			212			138			122			91			98			46		
35		Abukuma River		Higashino Bridge																																																				
36	Shioishi River	Before the confluence with Kawagayama River (Shunatsugawa Bridge)	Shioishi City			1,730			191						116			123			190						218			302			286			165			212			45			46			71								
37		Shioishi River		Ishino Bridge			430			590						590			350			270						234			360			208			146			225			188			137			153							
38	Abukuma River System	Matsumoto River	Zao Town			119			47						19			47			54			66			31			58			39			10			39			13			15			14								
39		Abukuma River		Nagami Bridge			33			36						68			38			32			101			47			222			0			27			178			26			26			14							
40	Abukuma River	Shibata Bridge	Shibata Town			32			61						60			32			31			68			52			12			31			12			19			20			16			37								
41		Abukuma River		Trakuma-obashi Bridge												2,470			540			88			340			63			154			152			166			24			74			88			94			84				
42	Abukuma River	Abukuma-obashi Bridge (Iwanuma)	Iwanuma City/Watari Town			91			760						410			380			1,410			136			196			143			730			300			1,410			243			247			500			750					
43		Abukuma River		Abukuma River Estuary (Watarai-obashi Bridge)												103			249			104			104			102			85			91			187			49			85			41			2,450			209			45	

3) Fukushima Prefecture

i. Hamadori

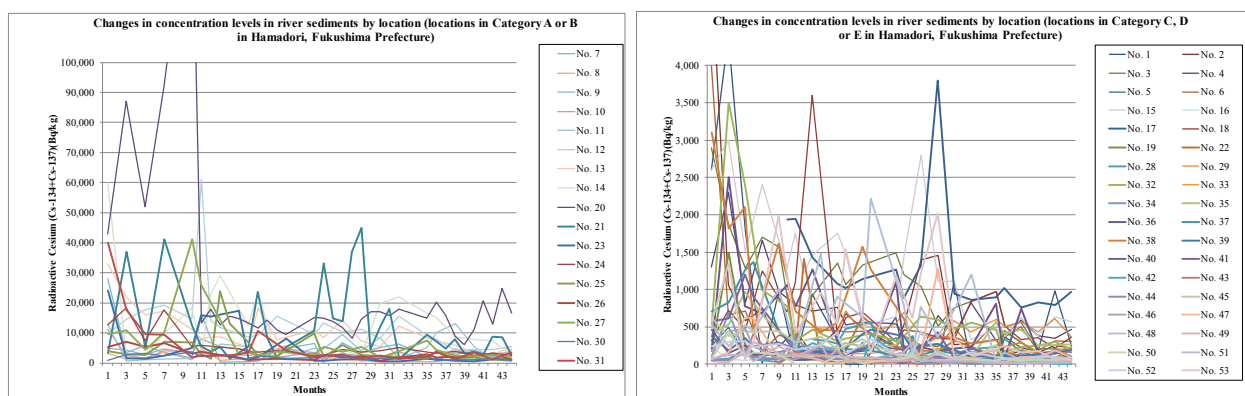
In Hamadori, Fukushima Prefecture, surveys were conducted 17 to 35 times from September 2011 to February 2015 for river sediment samples collected at 53 locations.

Regarding concentration levels of detected values, 15 locations were categorized into Category A, two locations into Category B, 13 locations into Category C, 10 locations into Category D, and 13 locations into Category E (see Table 4.3-5 and Table 4.3-6).

Concentration levels were generally decreasing at 41 locations but were generally unchanged or varying at 12 locations.

**Table 4.3-5 Categorization of detected values at respective locations
(Hamadori, Fukushima Prefecture: river sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	15	No.7, No.9, No.10, No.11, No.12, No.13, No.14, No.20, No.21, No.23, No.24, No.25, No.26, No.27, No.31
B	Upper 5 to 10 percentile	2	No.8, No.30
C	Upper 10 to 25 percentile	13	No.1, No.2, No.3, No.4, No.6, No.15, No.17, No.18, No.32, No.36, No.38, No.48, No.53
D	Upper 25 to 50 percentile	10	No.22, No.28, No.29, No.35, No.37, No.39, No.41, No.45, No.47, No.52
E	Lower than upper 25 to 50 percentile (lower 50%)	13	No.5, No.16, No.19, No.33, No.34, No.40, No.42, No.43, No.44, No.46, No.49, No.50, No.51



(*) Scales of the vertical axes differ in the left and right figures.

**Figure 4.3-4 Changes in concentration levels over the years at respective locations
(Hamadori, Fukushima Prefecture: river sediments)**

ii. Nakadori

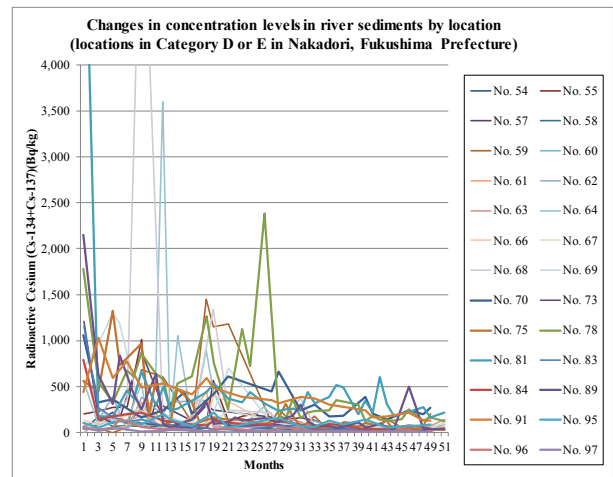
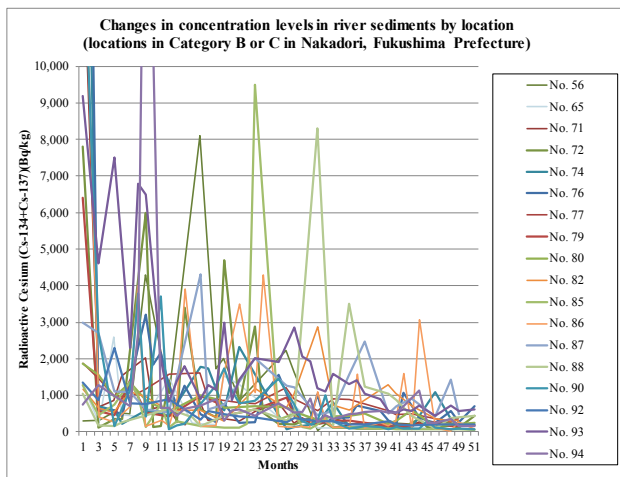
In Nakadori, Fukushima Prefecture, surveys were conducted 21 to 37 times from September 2011 to February 2015 for river sediment samples collected at 44 locations.

Regarding concentration levels of detected values, three locations were categorized into Category B, 15 locations into Category C, 10 locations into Category D, and 16 locations into Category E (see Table 4.3-7 and Table 4.3-8).

Concentration levels were generally decreasing at 40 locations but were generally unchanged or varying at four locations.

Table 4.3-7 Categorization of detected values at respective locations
(Nakadori, Fukushima Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	3	No.74, No.76, No.93
C	Upper 10 to 25 percentile	15	No.56, No.65, No.71, No.72, No.77, No.79, No.80, No.82, No.85, No.86, No.87, No.88, No.90, No.92, No.94
D	Upper 25 to 50 percentile	10	No.59, No.64, No.68, No.69, No.70, No.75, No.78, No.81, No.89, No.91
E	Lower than upper 25 to 50 percentile (lower 50%)	16	No.54, No.55, No.57, No.58, No.60, No.61, No.62, No.63, No.66, No.67, No.73, No.83, No.84, No.95, No.96, No.97



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-5 Changes in concentration levels over the years at respective locations
(Nakadori, Fukushima Prefecture: river sediments)

Table 4.3-8 Detection of radioactive cesium at respective locations (Nakadori, Fukushima Prefecture: river sediments)

No.	Water area	Location	Municipality	River sediments/Radioactive Cesium (Cs-134+Cs-137) Concentration(Bq/kg)*1																																				Changes	Average (#2)	No.	Coefficient of variation	Trends (#3)							
				FY2011									FY2012									FY2013									FY2014																				
				8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7						8	9	10	11	12	1	2
54	Abukuma River	Habuto Bridge	Nishigo Village	66	81	155	96		262		44				31	49	144	89					51	135		80		14	53	25				36	28	17		23	33	52			71	54	0.83						
55	Abukuma River	Famachohashi Bridge	Shirakawa City	200	228	270	280		1,010	46	330	184	56	107	60	85	560	125	180	203	77			113	57	51	46	59	39	33	53	22		40	47	17	54	30	53	24	22	12	36			134	55	1.41			
56	Yama River	Before the confluence with Abukuma River	Shirakawa City	290	330	530	490		4,300	1,050					8,100	1,720	2,010	860					2,230	1,630		43	380	232	234				243	244	215		279	240	241						1,176	56	1.57				
57	Yabuta River	Yabuta Bridge	Tanagun Town	77	108	218	150		870		290				129	300	246						170	132		159	135	66	71				81	52	71		51	45	51						165	57	1.08				
58	Kiava River	Yanagi Bridge	Hirata Village	27	165	66	70		64		65				14	57	19	72					37	40		29	40	11	21				21	17	19		16	0	17						40	58	0.88				
59	Iwade River	Senonaki Bridge	Shirakawa Town	45	47	0	55		680		610				105	1,450	1,150	1,780					116	248		42	179	15	120				78	0	139		14	63	203						297	59	1.45				
60	Yabuta River	Oj Bridge		35	36	51	52		145		50				55	98	100	98					71	80		46	127	64	54				16	24	24		22	23	78						61	60	0.57				
61	Abukuma River	Kawanote Bridge	Tanaka Village	71	34	37	77		330	105	213	84	53	73		180	450	49	120	130	138		108		57	63	40	31	38	50	72	69	69		15	57	78	18	49	24	58	33	64	58		89	61	0.98			
62	Abukuma River	Enochi Bridge		0	124	390	24		380		193	330				350	72	48					68	19		13	35	13	17				72	39	12		10	11	12		27					99	62	1.35			
63	Shukado River	Subagawa City water intake point	Subagawa City	72	97	138	126		182		77				83	168	94	108					109	175		113	47	63	51				37	58	28		11	27		138					91	63	0.54				
64	Shukado River	Before the confluence with Abukuma River		550	89	124	129		540	41	600	3,600	93	1,050		117	890	440	96	85	75		282		107	80	88	51	59	58	18	73	67		80	66	57	42	18	31	51	26	52	80		275	64	2.26			
65	Shibahashi River	Shibahashi Bridge	Koriyama City	1,240	260	2,600	480		380		1,470				237		200	1,540	1,300				240	730		102	106	114	199				75	148	99		114	85	131						99	65	1.24				
66	Yanagawa River	Yanagawa Bridge		137	79	184	160		236		140				99		81	400	340				85	57		49	66	39	61				49	61	25		17	25	19						110	66	0.93				
67	Abukuma River	Funchi Bridge	Yama City	27	119	87	173		270		52				96		113	120	239				132	98		35	69	110	75				38	65	53		42	25		112					99	67	0.65				
68	Abukuma River	Before the confluence with Abukuma River		750	270	134	360		6,400		215				89	108		1,340	242				213	49		370	73	66	64				69	21	64		60	51	60						503	68	2.68				
69	Onze River	Before the confluence with Babagawa River		700	960	1,290	1,190		183		164				110	370	199	700					106	96		60	50	56	87				90	71	64		66	49	18						304	69	1.30				
70	Onze River	Makunouchi Bridge	Koriyama City	1,060	330	360	310		163		240				440	209		420	610				450	660		241	298	174	178				390	206	139		237	202	264						345	70	0.62				
71	Onze River	Before the confluence with Abukuma River		13,500	690	860	1,540		2,020	600	690	610	290	189		820	330		360	290	420	550	800		241	390	232	224	295	129			263	194	208	186	272	126	180	154	199						996	71	2.78		
72	Abukuma River	Atsuta Bridge		7,800	116	350	350		6,000	148	169	1,410	269	3,400		610	400	4,700	740	2,880	520	220		197	280	400	233	251	113			114	90	103	101	145	177	146		344	136	114	179	107	444		938	72	1.91		
73	Abukuma River	After the confluence with Ichikuma River		1,210	184	99	122		96		74				50	116		158	63				83	85		42	21	40	39				24	38	24		32	33	28						121	73	2.05				
74	Gobayaku River	Kanokishita Bridge	Motomiya City	22,000	700	590	230		590		450				1,780	1,730		590	2,330				67	130		222	810	134	116				181	134	124		1,080	362	174						1,569	74	2.93				
75	Abukuma River	Before the confluence with Abukuma River		560	450	1,320	730		960	201	580	89	111	470		330	114		167	137	150	99	88		157	310	179	59	101	49		51	18	97		58	102	86	91	129	19	48	25	36	30		228	75	1.26		
76	Abukuma River	Takada Bridge		30,000	610	600	440		3,200	1,840	2,160	1,280	720	1,260		490	268	770	250	268	970	1,570		540	285	360	1,020	256	380				400	730		570	305	229	1,070		387	305	250	570	264	690		1,580	76	3.16	
77	Kuchibuto River	Kuchibutogawa Bridge	Nhonmatsu City	1,880	1,440	990	950		1,160		1,570				1,620	920		790	780				1,210	900		570	900	880				365	283	363		490	365	283	363						911	77	0.49				
78	Hiratsubo River	Obagawa Bridge		1,780	550	330	670	610	860	640	580	234	530		610	1,260	750	250	1,130	720	2,380		191	144	360	154	212	229				244	350		300	118	179	134		132	149	246	130	162	122		498	78	1.00		
79	Munahara River	Getouchi Bridge		6,400	570	460	1,410		520		410				980	800	450		620				930	430		229	302	321				169	141	171		268	165		187						759	79	1.76				
80	Meganu River	Furumaki Bridge		1,870	1,570	950	1,340		880		550				1,010	900	650		690				680	540		330	410	440	510				233	317	600		169	200	238						685	80	0.66				
81	Abukuma River	Heimi Bridge		6,500	176	171	460	370	660	290	500	242	255		340	440	530	370	330	440	320		235	250	259	242	440	318				390	520	490		198	341	219	600	310	185	220	278	166	216		508	81	2.04		
82	Nigori River	Before the confluence with Onoi River		1,160	650	530	1,090		980		590				610	410	300		1,180				61	77		72	610						1,290	1,050	720		370	299	322						831	82	0.68				
83	Ankawa River	Hirokura Bridge		1,160	270	167	114		139		77	79			45	42		22					61	77		72	22	29	38				24	15	16		17	23	18						115	83	2.10				
84	Isikawa River	Isikawa Bridge	Ishikawa City	790	137	173	199		216		125				82	74	132		84				87	119		87	44	99				33	38	31		75	60	40						130	84	1.23					
85	Ankawa River	Before the confluence with Abukuma River		1,290	460	750	1,380	990	142	760	119	280	237		161	145	117	119	220	9,500	340		500	135	85	200	380	122				96	85	70	71	79	76	66	67	67	61					555	85	2.87			
86	Matsukawa River			15,200	400	280	690	4,000	144	330	175	920	3,900		145	173	1,560	3,500	1,070	4,300	149		119	152	137	1,100	277	129				137	1,580	105	257	167	305														

iii. Aizu

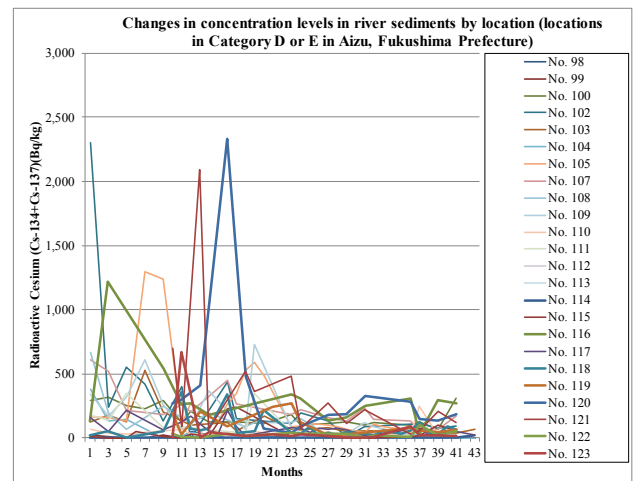
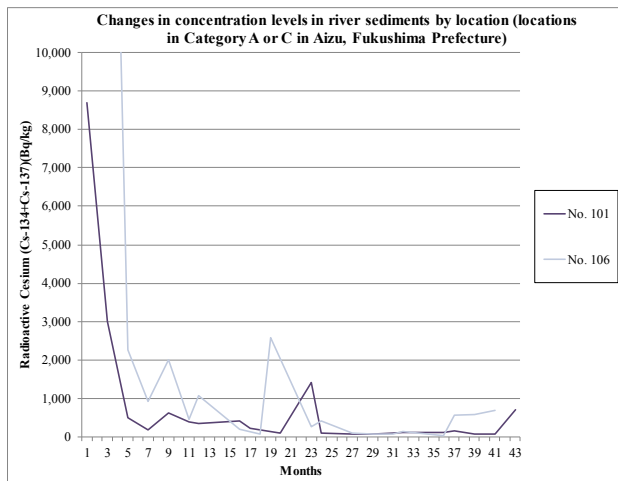
In Aizu, Fukushima Prefecture, surveys were conducted 13 to 31 times from September 2011 to December 2014 for river sediment samples collected at 26 locations.

Regarding concentration levels of detected values, one location was categorized into Category B, one location into Category C, six locations into Category D, and 18 locations into Category E (see Table 4.3-9 and Table 4.3-10).

Concentration levels were generally decreasing at 18 locations but were generally unchanged or varying at eight locations.

Table 4.3-9 Categorization of detected values at respective locations
(Aizu, Fukushima Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	1	No.106
C	Upper 10 to 25 percentile	1	No.101
D	Upper 25 to 50 percentile	6	No.102, No.105, No.107, No.116, No.120, No.121
E	Lower than upper 25 to 50 percentile (lower 50%)	18	No.98, No.99, No.100, No.103, No.104, No.108, No.109, No.110, No.111, No.112, No.113, No.114, No.115, No.117, No.118, No.119, No.122, No.123



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-6 Changes in concentration levels over the years at respective locations
(Aizu, Fukushima Prefecture: river sediments)

4) Ibaraki Prefecture

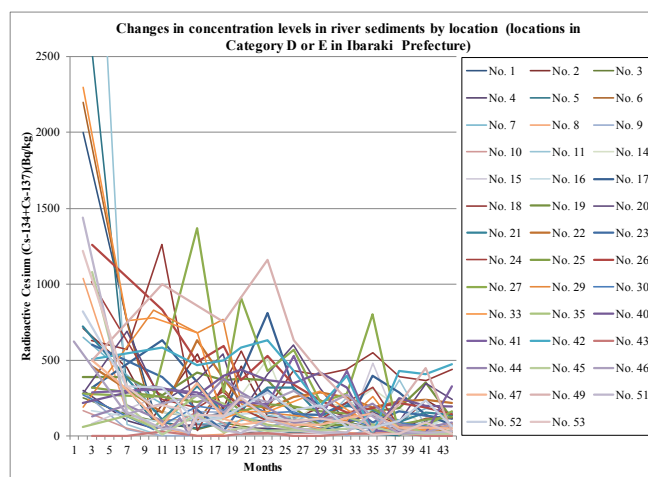
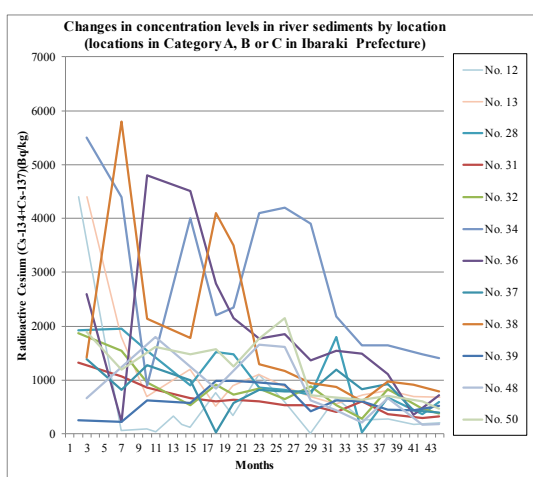
In Ibaraki Prefecture, surveys were conducted 11 to 17 times from August 2011 to February 2015 for river sediment samples collected at 53 locations (this analysis excludes the survey results at 39 locations where the survey was conducted only in 2011).

Regarding concentration levels of detected values, one location was categorized into Category A, two locations into Category B, nine locations into Category C, 27 locations into Category D, and 14 locations into Category E (see Table 4.3-11 and Table 4.3-12).

Concentration levels were generally decreasing at 45 locations but were generally unchanged or varying at eight locations.

Table 4.3-11 Categorization of detected values at respective locations
(Ibaraki Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	1	No.34
B	Upper 5 to 10 percentile	2	No.36, No.38
C	Upper 10 to 25 percentile	9	No.12, No.13, No.28, No.31, No.32, No.37, No.39, No.48, No.50
D	Upper 25 to 50 percentile	27	No.1, No.2, No.5, No.6, No.7, No.11, No.14, No.17, No.18, No.19, No.20, No.21, No.22, No.23, No.24, No.25, No.26, No.27, No.29, No.33, No.40, No.41, No.42, No.46, No.49, No.52, No.53
E	Lower than upper 25 to 50 percentile (lower 50%)	14	No.3, No.4, No.8, No.9, No.10, No.15, No.16, No.30, No.35, No.43, No.44, No.45, No.47, No.51



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-7 Changes in concentration levels over the years at respective locations
(Ibaraki Prefecture: river sediments)

5) Tochigi Prefecture

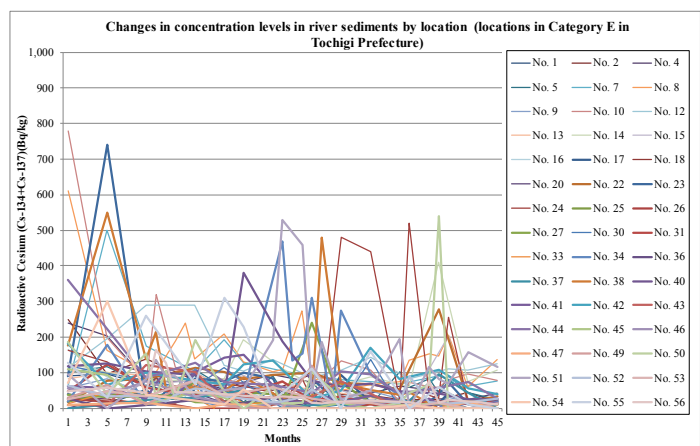
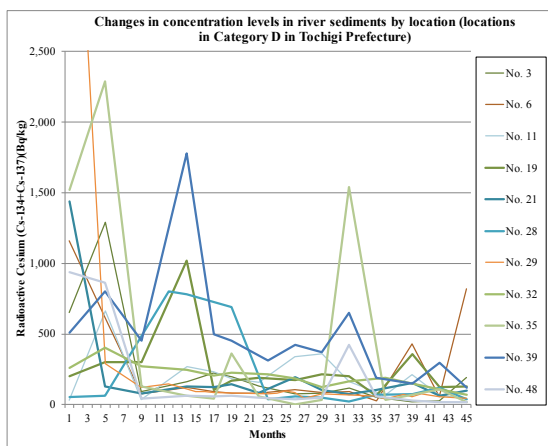
In Tochigi Prefecture, surveys were conducted 11 to 23 times from October 2011 to February 2015 at 56 locations (rivers) in public water areas (this analysis excludes the survey results at 49 locations where the survey was conducted only in 2011).

Regarding concentration levels of detected values, 11 locations were categorized into Category D and 45 locations were categorized into Category E (see Table 4.3-13 and Table 4.3-14).

Concentration levels were generally decreasing at 38 locations but were generally unchanged or varying at 18 locations.

Table 4.3-13 Categorization of detected values at respective locations
(Tochigi Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	11	No.3, No.6, No.11, No.19, No.21, No.28, No.29, No.32, No.35, No.39, No.48
E	Lower than upper 25 to 50 percentile (lower 50%)	45	No. 1, No.2, No.4, No.5, No.7, No.8, No.9, No.10, No.12, No.13, No.14, No.15, No.16, No.17, No.18, No.20, No.22, No.23, No.24, No.25, No.26, No.27, No.30, No.31, No.33, No.34, No.36, No.37, No.38, No.40, No.41, No.42, No.43, No.44, No.45, No.46, No.47, No.49, No.50, No.51, No.52, No.53, No.54, No.55, No.56



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-8 Changes in concentration levels over the years at respective locations
(Tochigi Prefecture: river sediments)

6) Gunma Prefecture

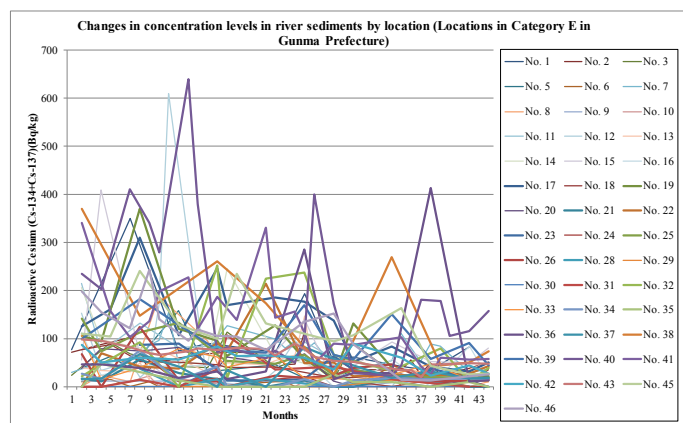
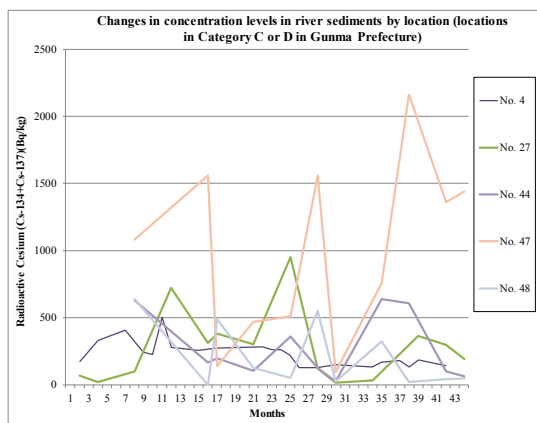
In Gunma Prefecture, surveys were conducted 8 to 23 times from November 2011 to January 2015 at 48 locations (rivers) in public water areas (this analysis excludes the survey results at eight locations where the survey was conducted only in 2011).

Regarding concentration levels of detected values, one location was categorized into Category C, four locations into Category D, and 43 locations into Category E (see Table 4.3-15 and Table 4.3-16).

Concentration levels were generally decreasing at 33 locations but were generally unchanged or varying at 15 locations.

Table 4.3-15 Categorization of detected values at respective locations
(Gunma Prefecture: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	1	No.47
D	Upper 25 to 50 percentile	4	No.4, No.27, No.44, No.48
E	Lower than upper 25 to 50 percentile (lower 50%)	43	No. 1, No.2, No.3, No.5, No.6, No.7, No.8, No.9, No.10, No.11, No.12, No.13, No.14, No.15, No.16, No.17, No.18, No.19, No.20, No.21, No.22, No.23, No.24, No.25, No.26, No.28, No.29, No.30, No.31, No.32, No.33, No.34, No.35, No.36, No.37, No.38, No.39, No.40, No.41, No.42, No.43, No.45, No.46



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-9 Changes in concentration levels over the years at respective locations
(Gunma Prefecture: river sediments)

6) Chiba and Saitama Prefectures and Tokyo Metropolis

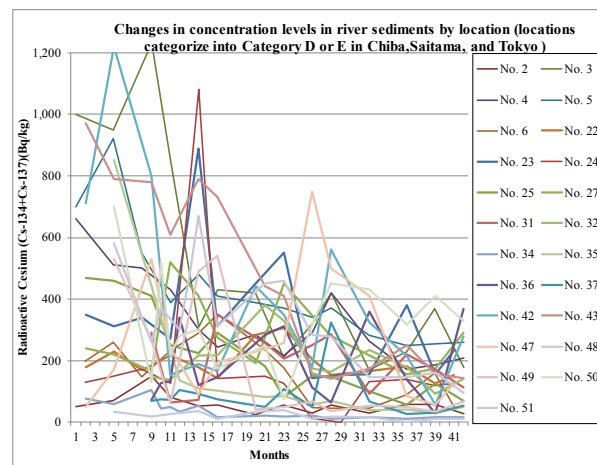
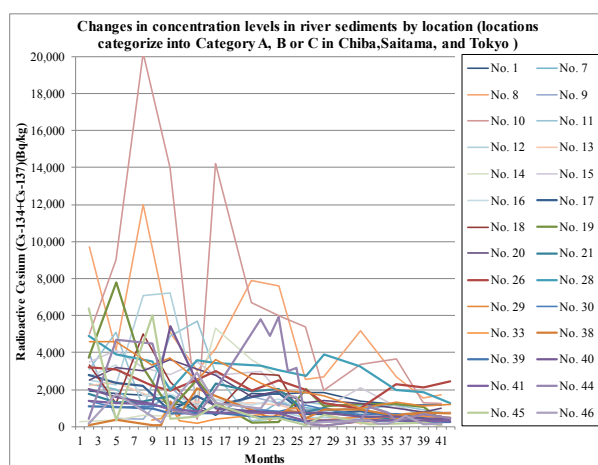
In Chiba and Saitama Prefectures and Tokyo Metropolis, surveys were conducted 12 to 22 times from October 2011 to February 2015 at 51 locations (rivers) in public water areas (47 locations in Chiba Prefecture, two locations in Saitama Prefecture, and two locations in Tokyo Metropolis).

Regarding concentration levels of detected values, three locations were categorized into Category A, 11 locations into Category B, 14 locations into Category C, 14 locations into Category D, and nine locations into Category E (see Table 4.3-17 and Table 4.3-18).

Concentration levels were generally decreasing at 37 locations but were generally unchanged or varying at 14 locations.

Table 4.3-17 Categorization of detected values at respective locations
(Chiba and Saitama Prefectures and Tokyo Metropolis: river sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	3	No.8, No.10, No.28
B	Upper 5 to 10 percentile	11	No.1, No.11, No.12, No.15, No.16, No.18, No.19, No.20, No.26, No.29, No.44
C	Upper 10 to 25 percentile	14	No.7, No.9, No.13, No.14, No.17, No.21, No.30, No.33, No.38, No.39, No.40, No.41, No.45, No.46
D	Upper 25 to 50 percentile	14	No.3, No.4, No.5, No.22, No.23, No.25, No.27, No.31, No.32, No.42, No.43, No.47, No.50, No.51
E	Lower than upper 25 to 50 percentile (lower 50%)	9	No.2, No.6, No.24, No.34, No.35, No.36, No.37, No.48, No.49



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-10 Changes in concentration levels over the years at respective locations
(Chiba and Saitama Prefectures and Tokyo Metropolis: river sediments)

(2)-2 Lakes

1) Miyagi Prefecture

In Miyagi Prefecture, surveys were conducted 7 to 13 times from October 2011 to December 2014 for lake sediment samples collected at 21 locations.

Regarding concentration levels of detected values, six locations were categorized into Category D and 15 locations were categorized into Category E (see Table 4.3-19 and Table 4.3-20).

Concentration levels were generally decreasing at 12 locations but were generally unchanged or varying at nine locations.

Table 4.3-19 Categorization of detected values at respective locations
(Miyagi Prefecture: lake sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	6	No.8, No.9, No.13, No.15, No.16, No.17
E	Lower than upper 25 to 50 percentile (lower 50%)	15	No.1, No.2, No.3, No.4, No.5, No.6, No.7, No.10, No.11, No.12, No.14, No.18, No.19, No.20, No.21

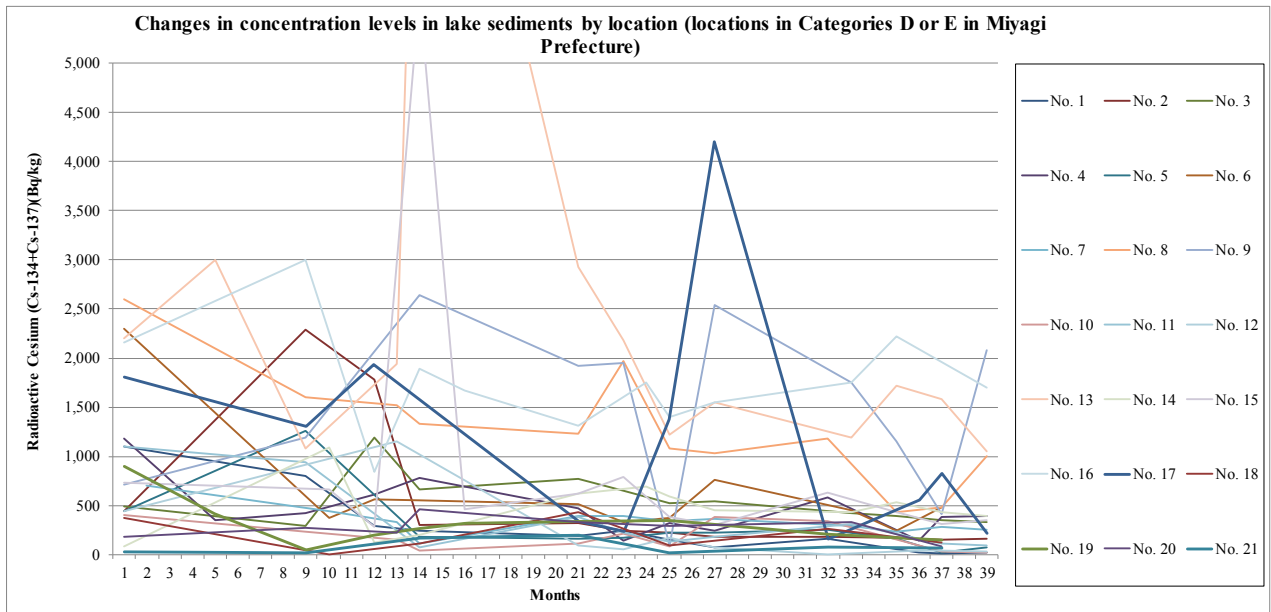


Figure 4.3-11 Changes in concentration levels over the years at respective locations
(Miyagi Prefecture: lake sediments)

2) Fukushima Prefecture

i. Hamadori

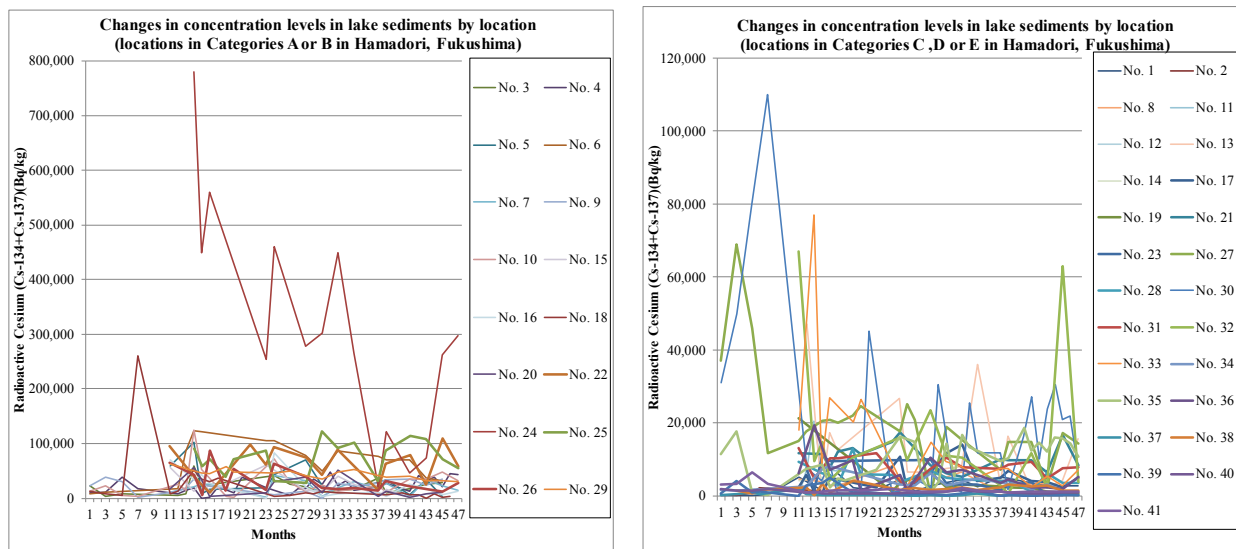
In Hamadori, Fukushima Prefecture, surveys were conducted 5 to 33 times from September 2011 to February 2015 for lake sediment samples collected at 41 locations.

Regarding concentration levels of detected values, eight locations were categorized into Category A, eight locations into Category B, 16 locations into Category C, six locations into Category D, and three locations into Category E (see Table 4.3-21 and Table 4.3-22).

Concentration levels were generally decreasing at 21 locations, generally unchanged or varying at three locations, and generally increasing at three locations.

Table 4.3-21 Categorization of detected values at respective locations
(Hamadori, Fukushima Prefecture: lake sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	8	No.5, No.6, No.10, No.22, No.24, No.25, No.26, No.29
B	Upper 5 to 10 percentile	8	No.3, No.4, No.7, No.9, No.15, No.16, No.18, No.20
C	Upper 10 to 25 percentile	16	No.8, No.11, No.13, No.17, No.19, No.21, No.23, No.27, No.28, No.30, No.31, No.32, No.33, No.34, No.35, No.36
D	Upper 25 to 50 percentile	6	No.1, No.14, No.38, No.39, No.40, No.41
E	Lower than upper 25 to 50 percentile (lower 50%)	3	No.2, No.12, No.37



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-12 Changes in concentration levels over the years at respective locations
(Hamadori, Fukushima Prefecture: lake sediments)

ii. Nakadori

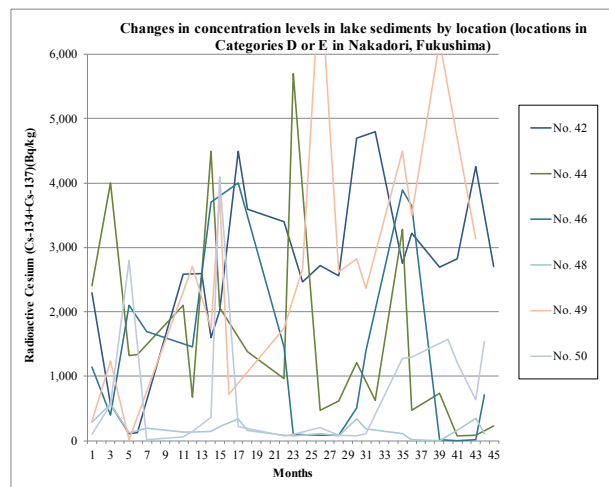
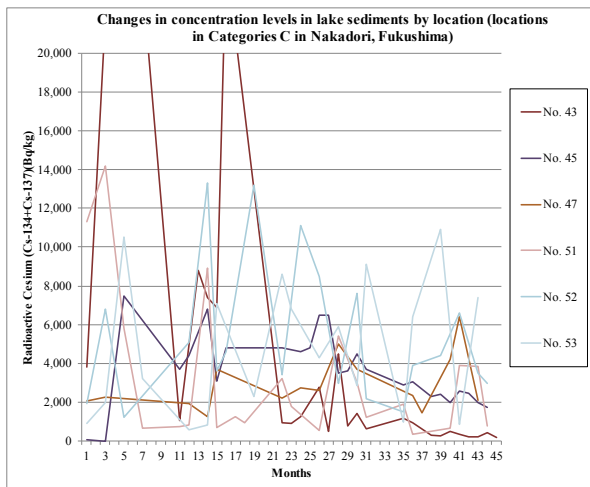
In Nakadori, Fukushima Prefecture, surveys were conducted 15 to 27 times from September 2011 to February 2015 for lake sediment samples collected at 12 locations.

Regarding concentration levels of detected values, six locations were categorized into Category C, four locations into Category D, and two locations into Category E (see Table 4.3-23 and Table 4.3-24).

Concentration levels were generally decreasing at four locations, generally unchanged or varying at six locations, and generally increasing at two locations.

Table 4.3-23 Categorization of detected values at respective locations
(Nakadori, Fukushima Prefecture: lake sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	6	No.43, No.45, No.47, No.51, No.52, No.53
D	Upper 25 to 50 percentile	4	No.42, No.44, No.46, No.49
E	Lower than upper 25 to 50 percentile (lower 50%)	2	No.48, No.50



(*) Scales of the vertical axes differ in the left and right figures.

Figure 4.3-13 Changes in concentration levels over the years at respective locations
(Nakadori, Fukushima Prefecture: lake sediments)

Table 4.3-24 Detection of radioactive cesium at respective locations (Nakadori, Fukushima Prefecture: lake sediments)

Location			Lake Sediments/Radioactive Cesium (Cs-134+Cs-137)/Concentration(Bq/kg)(*1)																														Changes	average (*2)	No.	efficiency of cesium	Trends (*3)													
No.	Location	Municipality	FY2011					FY2012					FY2013					FY2014																																
			8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3																
42	Sarikamigawa Dam Reservoir	Fukushima City		2,300		570		104	116					2,580	2,600	1,600	2,020		4,500	3,600						3,400	2,470	2,720	2,560	4,700	4,800		2,750	3,220	2,690	2,820	4,250	2,700		2,685	42	0.48	↘							
43	Lake Handanuma (farm pond)	Kori Town		3,800	21,900		35,000							1,050	8,800	7,400	6,900	24,900								930	890	1,260	2,770	520	4,500	790	1,400	630		1,190	920	317	257	500	346	216	233	437	176		4,742	43	1.83	↘
44	Okie Pond (farm pond)	Motomiya City		2,400		4,000	1,320	1,340						2,110	680	4,500	2,070	1,840		1,380							960	5,700		470	620	1,220	630		3,280	470	730	71	85	226		1,641	44	0.92	↘					
45	Miharu Dam	Miharu Town		69		0	7,500							3,700	4,400	6,800	3,100	4,800									4,800	4,600	4,800	6,500	6,500	3,500	3,600	4,500	3,700		2,880	3,040	2,310	2,410	1,990	2,580	2,440	1,960	1,740		3,624	45	0.52	↘
46	Hounokusa (farm pond)	Koriyama City		1,140		400	2,100	1,700						1,450	3,700			4,000								1,460	92		83	88	510	1,400		3,900	3,640	18	0	13	710		1,390	46	1.03	↘						
47	Lake Hatori	Tenei Village		2,060		2,240								1,950	1,270	3,700										2,210	2,750	2,630	5,000	3,700			2,340	1,440		4,200	6,400	2,080				2,931	47	0.48	↔					
48	Hadodaira (farm pond)	Sakagawa City		290		570	119	191					139	133	148	217	340	163								88	75		106	69	340	179		104	16	0	159	351	107		177	48	0.74	↘						
49	Sengosawa Dam Reservoir	Ishikawa Town		300		1,240	17							2,700	1,740	3,800	720									1,740	2,670	7,300	2,620	2,830	2,370		4,500	3,500	6,200	4,700	3,140				2,894	49	0.67	↘						
50	Watarike Pond (farm pond)	Yabuki Town		102		550	2,800	17					63	144	360	4,100	222									75	99		202	88	68	107	4,120	1,280	1,300		1,570	1,210	640	1,540		787	50	1.34	↘					
51	Izumioka (farm pond)	Shinkawa City		11,300		14,200	5,800	660					720	820	8,900	710	1,270	940								3,200	1,770		540	5,400	3,000	1,200		1,880	326		670	3,890	3,860	780		3,265	51	1.16	↘					
52	Hokkawa Dam	Nahigo Village		1,920		6,800	1,210						5,100	13,300	3,600	4,600		13,200								3,400	11,100	8,500	2,970	7,600	2,180		1,480	3,900	4,400	6,600	3,480	2,990		5,417	52	0.68	↘							
53	Lake Nanko	Shinkawa City		900		1,980	10,500	3,200					580	820	7,100			2,300								8,600	6,800		4,300	5,900	2,870	9,100		970	6,400	10,900	840	7,400		4,814	53	0.73	↘							
			total number of samples		253	Detection times		250																													2,864		average											

*1: Blank cells are locations where samples were not collected. The result "Not detectable" is indicated as "0."

*3: Results of the analysis of trends at respective locations using the method explained on P.60
 ↘ Decreasing ↗ Increasing ↔ Unchanged ⚡ Varying

*2: Arithmetic Average, calculated by assuming ND=0. Color codes show categories (see the right).

A B C D E

iii. Aizu

In Aizu, Fukushima Prefecture, surveys were conducted 10 to 30 times from September 2011 to February 2015 for lake sediment samples collected at 31 locations.

Regarding concentration levels of detected values, eight locations were categorized into Category D and 23 locations were categorized into Category E (see Table 4.3-25 and Table 4.3-26).

Concentration levels were generally decreasing at four locations, generally unchanged or varying at 24 locations, and generally increasing at three locations.

Table 4.3-25 Categorization of detected values at respective locations
(Aizu, Fukushima Prefecture: lake sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	8	No.54, No.55, No.56, No.58, No.59, No.60, No.74, No.78
E	Lower than upper 25 to 50 percentile (lower 50%)	23	No.57, No.61, No.62, No.63, No.64, No.65, No.66, No.67, No.68, No.69, No.70, No.71, No.72, No.73, No.75, No.76, No.77, No.79, No.80, No.81, No.82, No.83, No.84

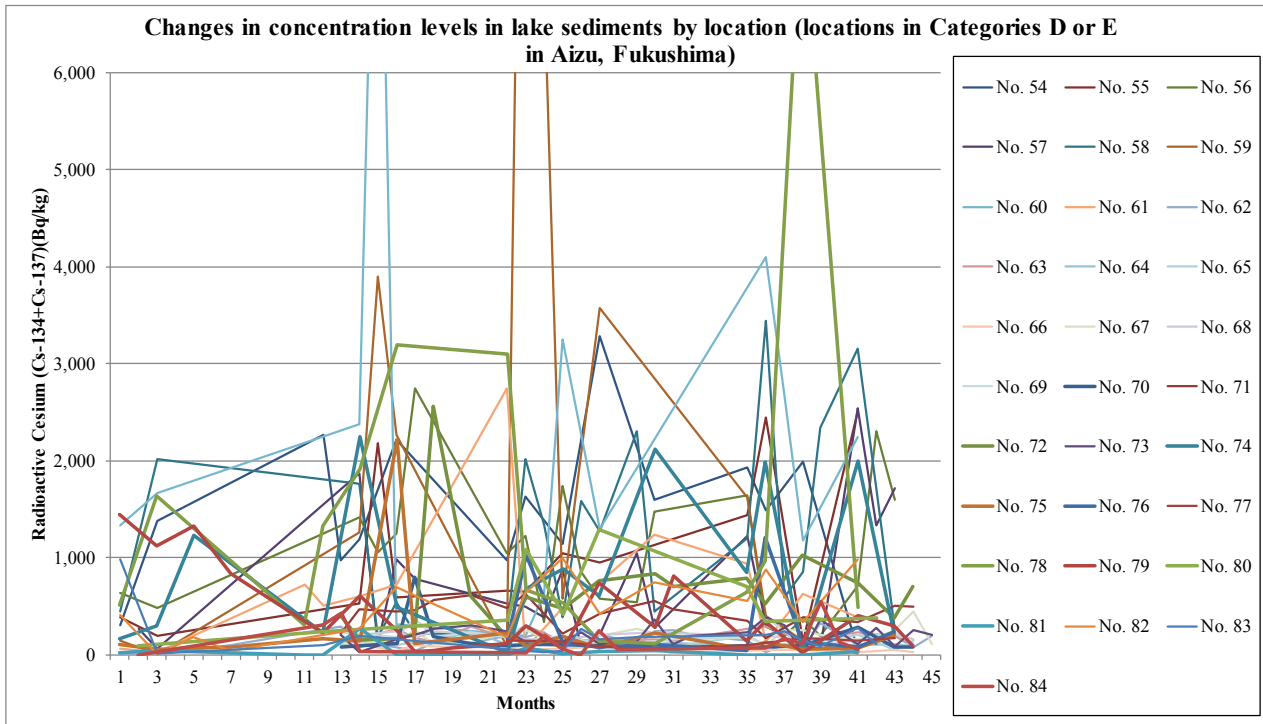


Figure 4.3-14 Changes in concentration levels over the years at respective locations
(Aizu, Fukushima Prefecture: lake sediments)

3) Ibaraki Prefecture

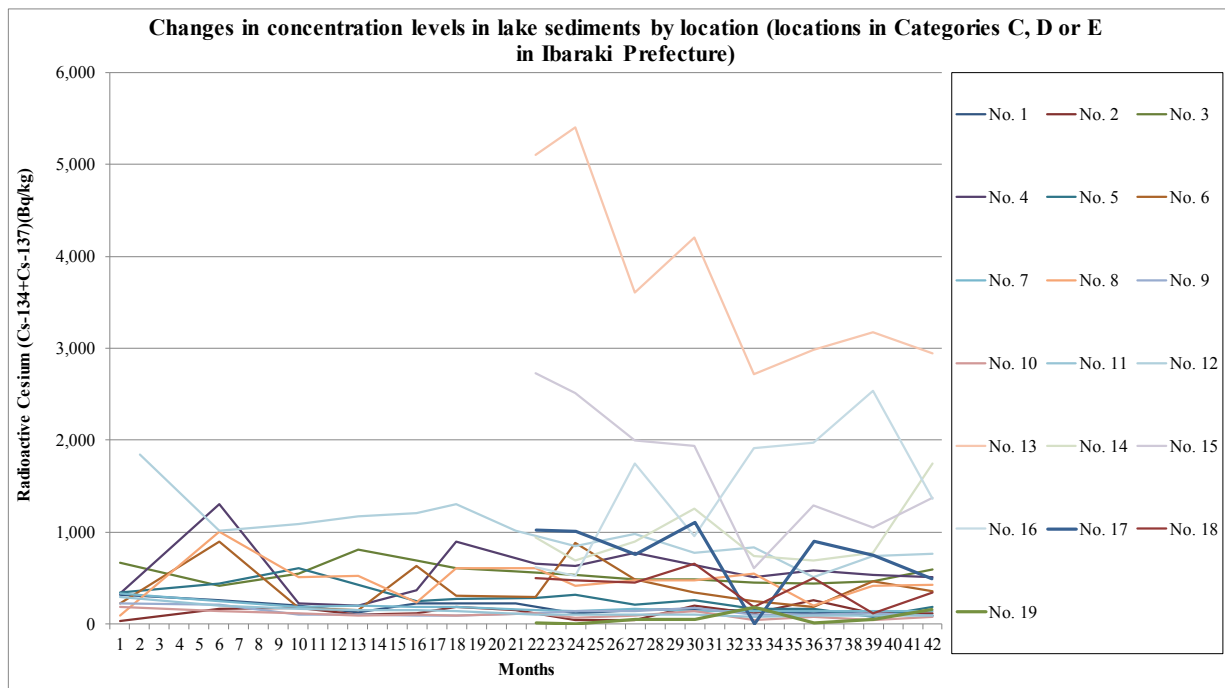
In Ibaraki Prefecture, surveys were conducted 8 to 14 times from September 2011 to February 2015 for lake sediment samples collected at 19 locations.

Regarding concentration levels of detected values, one location was categorized into Category C, four locations into Category D, and 14 locations into Category E (see Table 4.3-27 and Table 4.3-28).

Concentration levels were generally decreasing at 11 locations, generally unchanged or varying at seven locations, and generally increasing at one location.

**Table 4.3-27 Categorization of detected values at respective locations
(Ibaraki Prefecture: lake sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	1	No.13
D	Upper 25 to 50 percentile	4	No.12, No.14, No.15, No.16
E	Lower than upper 25 to 50 percentile (lower 50%)	14	No.1, No.2, No.3, No.4, No.5, No.6, No.7, No.8, No.9, No.10, No.11, No.17, No.18, No.19



**Figure 4.3-15 Changes in concentration levels over the years at respective locations
(Ibaraki Prefecture: lake sediments)**

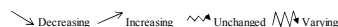
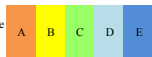
Table 4.3-28 Detection of radioactive cesium at respective locations (Ibaraki Prefecture: lake sediments)

Location			Lake Sediments/Radioactive Cesium (Cs-134+Cs-137)/Concentration(Bq/kg)(*1)																											Changes	average (*2)	No.	coefficient of variation	Trends (*3)																					
No.	Location	Municipality	FY2011					FY2012					FY2013					FY2014																																					
			8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10						11	12	1	2	3																
1	Hinuma	Hiroua	320					260					200			122			219	219			221			114			155			165			136			111			136			94		177	1	0.36							
2		Miyamae	37					162					179			98			118	184			146			49			49			204			119			264			120			119		132	2	0.50							
3		Oyazawa	670					420					550			810			690	610			570			540			490			490			450			442			460			590		556	3	0.21							
4	Lake Kasumigaura	Offshore of Tamatsukuri	330					1,300					228			201			370	890					650			630			770			640			510			580			540			510		582	4	0.51					
5		Offshore of Kakeum	340					440					610			430			252	270					280			320			208			257			165			168			78			182		286	5	0.49					
6		Center	221					900					178			151			630	310					300			880			490			340			242			192			460			360		404	6	0.63					
7	Offshore of Aso	330					250					183			202			186	183					150			139			164			138			143			134			139			138		177	7	0.32						
8	Lake Kitaura	Offshore of Kamaya	90					1,000					510			520			239	610					610			410			470			470			550			203			416			429		466	8	0.48					
9		Jingu Bridge	220					217					106			103			93	95					121			136			139			172			99			107			115			86		129	9	0.34					
10	Hitachitone River	Lake Sotomasakaura	184					143					110			97			102	93					113			66			91			141			49			76			42			79		99	10	0.40					
11		Beku	290					205					168			152			154	142					104			102			108			98			74			97			95			91		134	11	0.44					
12	Lake Ushikunuma	Center of Lake Ushikunuma		1,840				1,020					1,090			1,170			1,210	1,300				1,010			850			980			770			840			510			740			760		1,006	12	0.32						
13	Mizunuma Dam	Center	Kitaibaraki City																							5,100			5,400			3,600			4,200			2,720			2,980			3,170			2,940		3,764	13	0.28				
14	Koyama Dam		Takahagi City																								940			690			890			1,250			740			690			770			1,750		965	14	0.21			
15	Hananuki Dam																										2,730			2,520			2,000			1,940			610			1,290			1,050			1,380		1,690	15	0.46			
16	Jyuou Dam		Hitachi City																									620			520			1,750			950			1,920			1,980			2,540			1,360		1,455	16	0.53		
17	Ryuji Dam		Hitachiota City																										1,020			1,010			760			1,110			0			900			740			490		754	17	0.50	
18	Fujigawa Dam		Shirosato Town																										500			480			450			650			193			498			117			346		404	18	0.47	
19	Iida Dam		Kasama City																										18			0			45			53			180			11			55			156		65	19	0.93	
			total number of samples	224	Detection times		222																												697	average																			

*1: Blank cells are locations where samples were not collected. The result "Not detectable" is indicated as "0."

*3: Results of the analysis of trends at respective locations using the method explained on P.60

*2: Arithmetic Average; calculated by assuming ND=0. Color codes show categories (see the right).



4) Tochigi Prefecture

In Tochigi Prefecture, surveys were conducted 10 to 14 times from October 2011 to December 2014 for lake sediment samples collected at eight locations.

Regarding concentration levels of detected values, one location was categorized into Category C, one location into Category D, and six locations into Category E (see Table 4.3-29 and Table 4.3-30).

Concentration levels were generally decreasing at one location, generally unchanged or varying at four locations, and generally increasing at three locations.

Table 4.3-29 Categorization of detected values at respective locations
(Tochigi Prefecture: lake sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	1	No.4
D	Upper 25 to 50 percentile	1	No.2
E	Lower than upper 25 to 50 percentile (lower 50%)	6	No.1, No.3, No.5, No.6, No.7, No.8

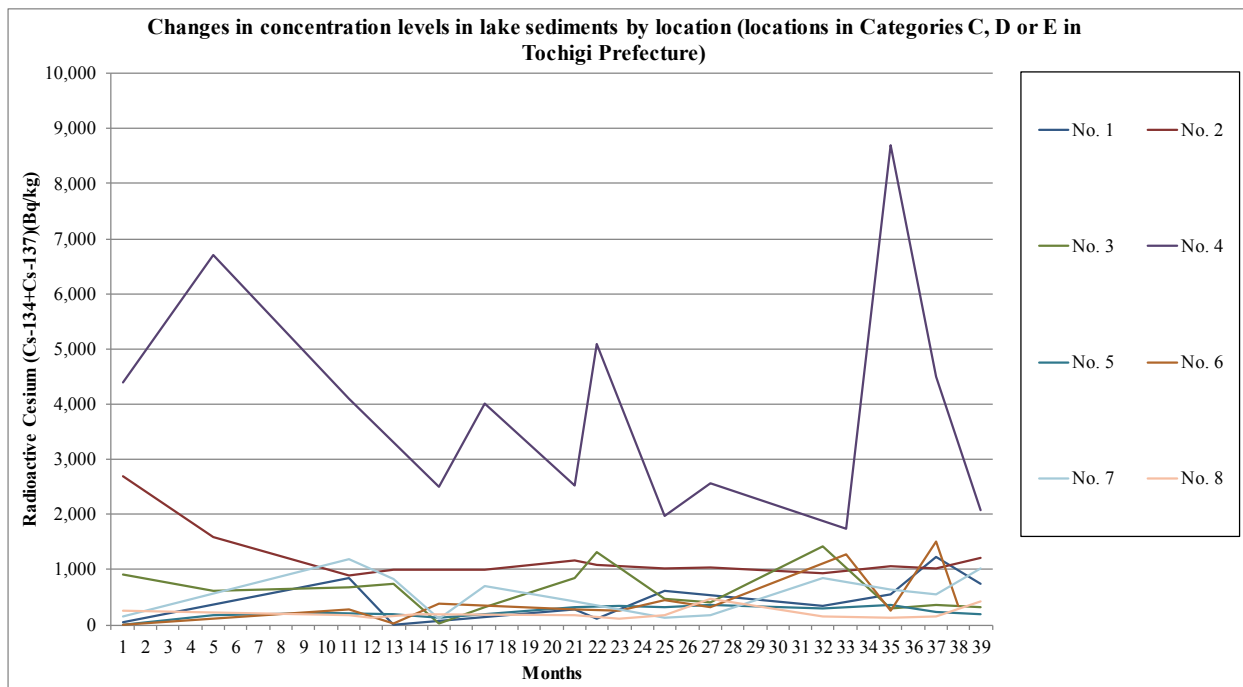


Figure 4.3-16 Changes in concentration levels over the years at respective locations
(Tochigi Prefecture: lake sediments)

5) Gunma Prefecture

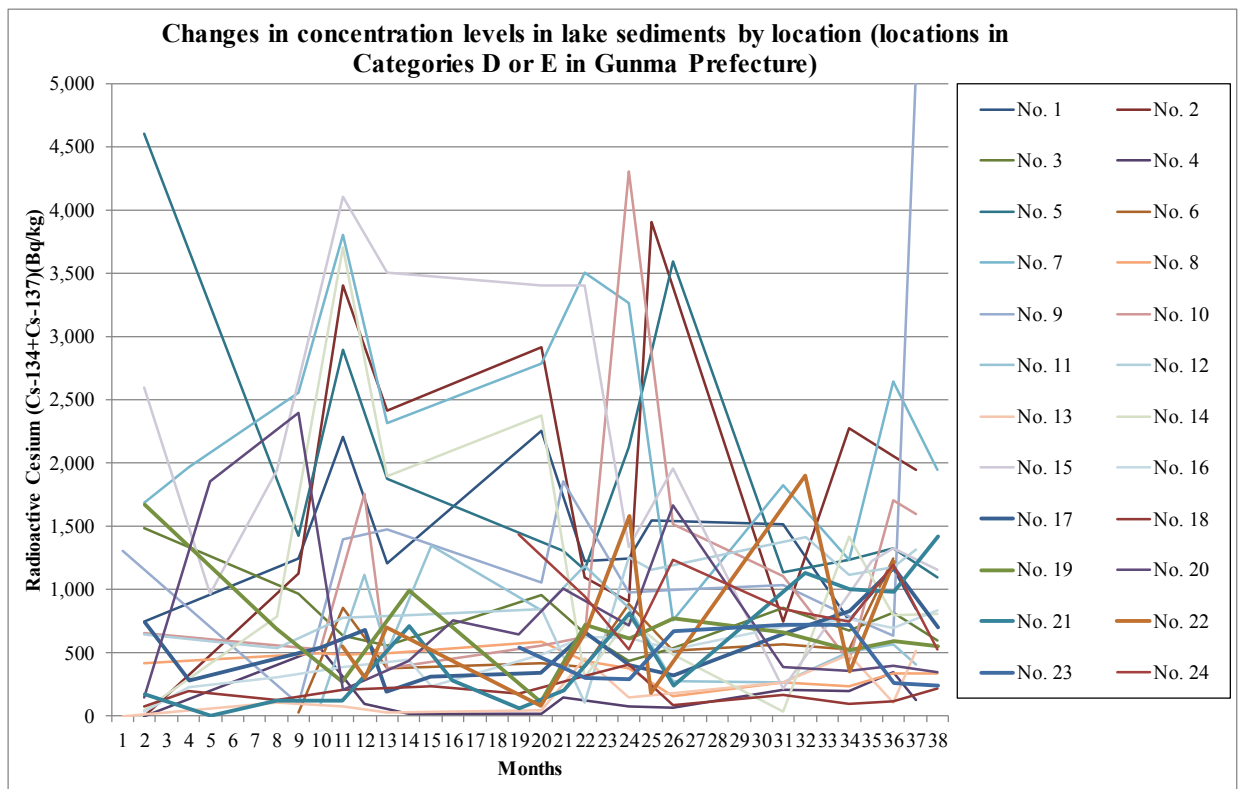
In Gunma Prefecture, surveys were conducted 8 to 14 times from November 2011 to December 2014 for lake sediment samples collected at 24 locations.

Regarding concentration levels of detected values, 11 locations were categorized into Category D and 13 locations were categorized into Category E (see Table 4.3-31 and Table 4.3-32).

Concentration levels were generally decreasing at four locations, generally unchanged or varying at 15 locations, and generally increasing at five locations.

**Table 4.3-31 Categorization of detected values at respective locations
(Gunma Prefecture: lake sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	11	No.1, No.2, No.5, No.7, No.9, No.10, No.12, No.14, No.15, No.20, No.24
E	Lower than upper 25 to 50 percentile (lower 50%)	13	No.3, No.4, No.6, No.8, No.11, No.13, No.16, No.17, No.18, No.19, No.21, No.22, No.23



**Figure 4.3-17 Changes in concentration levels over the years at respective locations
(Gunma Prefecture: lake sediments)**

6) Chiba Prefecture

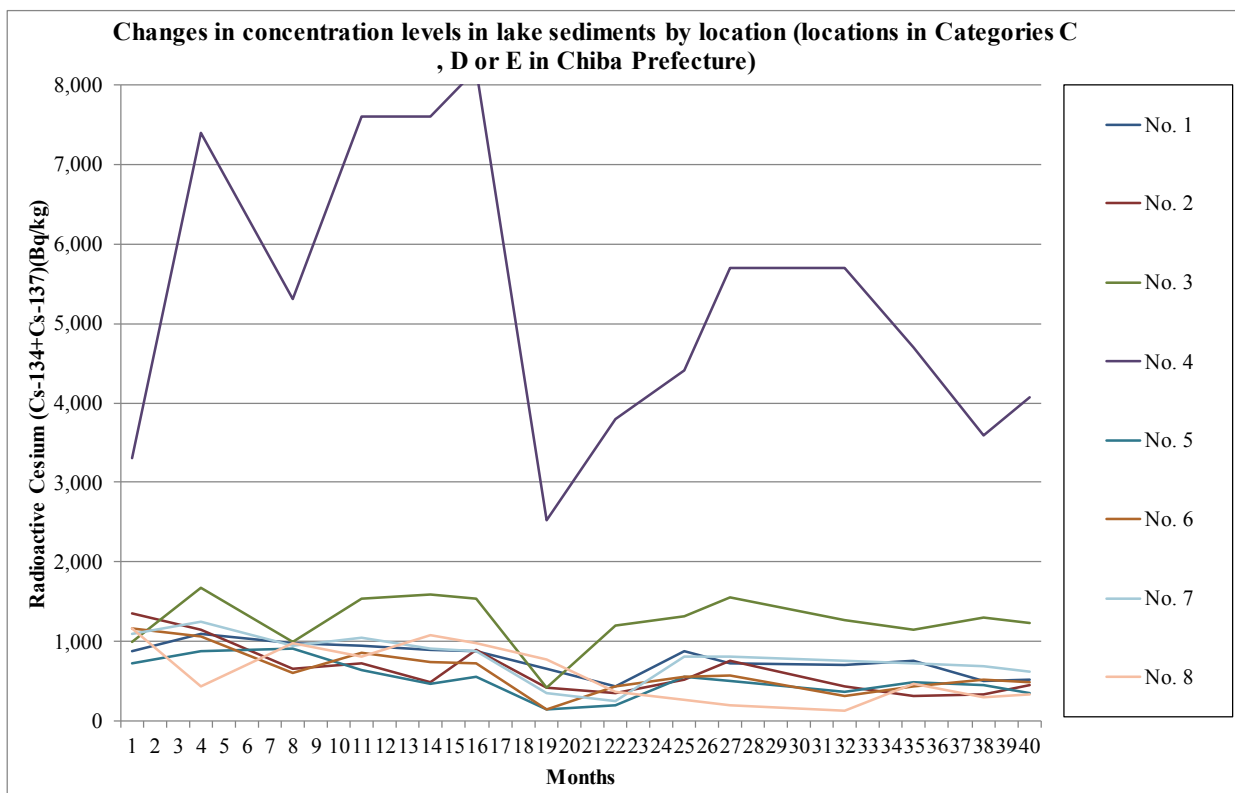
In Chiba Prefecture, surveys were conducted 14 times from November 2011 to February 2015 for lake sediment samples collected at eight locations.

Regarding concentration levels of detected values, one location was categorized into Category C, one location into Category D, and six locations into Category E (see Table 4.3-33 and Table 4.3-34).

Concentration levels were generally decreasing at six locations but were generally unchanged or varying at two locations.

**Table 4.3-33 Categorization of detected values at respective locations
(Chiba Prefecture: lake sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	1	No.4
D	Upper 25 to 50 percentile	1	No.3
E	Lower than upper 25 to 50 percentile (lower 50%)	6	No.1, No.2, No.5, No.6, No.7, No.8



**Figure 4.3-18 Changes in concentration levels over the years at respective locations
(Chiba Prefecture: lake sediments)**

Table 4.3-34 Detection of radioactive cesium at respective locations (Chiba Prefecture: lake sediments)

Location			Lake Sediments/Radioactive Cesium (Cs-134+Cs-137) Concentration(Bq/kg)(*1)																																Changes	average (*2)	No.	coefficient of variation	Trends (*3)														
No.	Location	Municipality	FY2011				FY2012				FY2013				FY2014																																						
			8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3																			
1	Lake Teganuma	Fusashita				870			1,090				980			940			900			880			660			440			880			730			710			750			500			520	↘	775	1	0.25	↘		
2		Shimoteganuma Chuo				1,350			1,140				650			720			490			900			420			349			520			760			440			320			325			443	↘	631	2	0.50	↘		
3		Teganuma Chuo						990			1,670				990			1,540			1,580			1,540			420			1,200			1,320			1,550			1,270			1,150			1,300			1,230	↘	1,268	3	0.26	↘
4		Nedoshita	Ahiko City/Kashiwa City				3,300			7,400				5,300			7,600			7,600			8,200			2,530			3,800			4,400			5,700			5,700			4,700			3,600			4,060	↘	5,278	4	0.35	↘	
5	Lake Inbanuma	Kita-Inbanuma Chuo				730			880				910			630			460			560			151			195			550			500			360			480			450			350	↘	515	5	0.43	↘		
6		Ipponmatsushita	Inazi City				1,160			1,070				600			860			740			730			152			440			560			570			313			430			520			490	↘	617	6	0.45	↘	
7		Lower area of Josaido water intake	Sakura City				1,100			1,250				940			1,050			910			880			340			251			800			800			760			730			690			620	↘	794	7	0.34	↘	
8		Asobashi Bridge	Yachiyo City				1,160			440				980			800			1,080			970			770			360			266			202			121			460			304			338	↘	589	8	0.60	↘	
total number of samples			112	Detection times			112																															1,308	average														

*1: Blank cells are locations where samples were not collected. The result "Not detectable" is indicated as "0."
 *2: Arithmetic Average; calculated by assuming ND=0. Color codes show categories (see the right).
 *3: Results of the analysis of trends at respective locations using the method explained on P.60
 ↘ Decreasing ↗ Increasing ~ Unchanged ~ Varying

A B C D E

(2)-3 Coastal areas

1) Iwate Prefecture

In Iwate Prefecture, surveys were conducted 7 times from January 2012 to November 2014 for coastal area sediment samples collected at two locations.

Regarding concentration levels of detected values, both two locations were categorized into Category E (see Table 4.3-35 and Table 4.3-36).

Concentration levels were generally unchanged or varying at these two locations.

Table 4.3-35 Categorization of detected values at respective locations
(Iwate Prefecture: coastal area sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	0	(None)
D	Upper 25 to 50 percentile	0	(None)
E	Lower than upper 25 to 50 percentile (lower 50%)	2	No.1、No.2

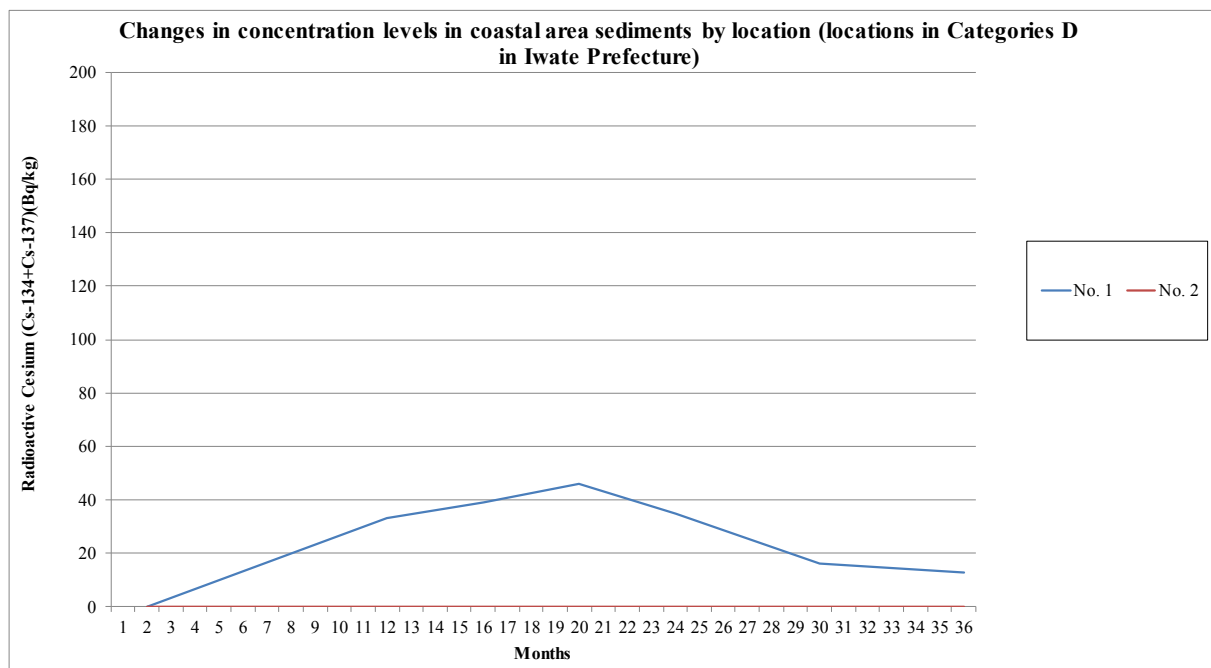


Figure 4.3-19 Changes in concentration levels over the years at respective locations
(Iwate Prefecture: coastal area sediments)

2) Miyagi Prefecture

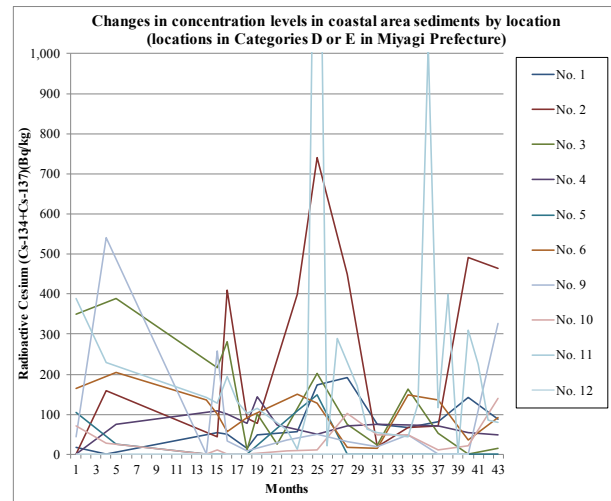
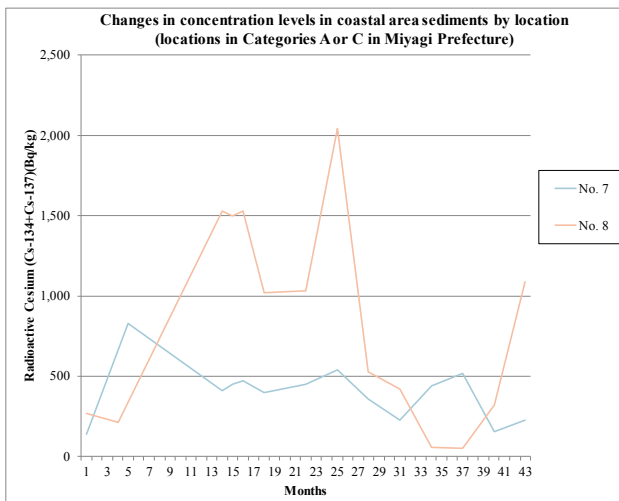
In Miyagi Prefecture, surveys were conducted 7 to 27 times from October 2011 to February 2015 for coastal area sediment samples collected at 12 locations.

Regarding concentration levels of detected values, one location was categorized into Category A, one location into Category C, five locations into Category D, and five locations into Category E (see Table 4.3-37 and Table 4.3-38).

Concentration levels were generally decreasing at three locations, generally unchanged or varying at eight locations, and generally increasing at one location.

**Table 4.3-37 Categorization of detected values at respective locations
(Miyagi Prefecture: coastal area sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	1	No.8
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	1	No.7
D	Upper 25 to 50 percentile	5	No.2, No.3, No.6, No.9, No.11
E	Lower than upper 25 to 50 percentile (lower 50%)	5	No.1, No.4, No.5, No.10, No.12



(*) Scales of the vertical axes differ in the left and right figures.

**Figure 4.3-20 Changes in concentration levels over the years at respective locations
(Miyagi Prefecture: coastal area sediments)**

3) Fukushima Prefecture

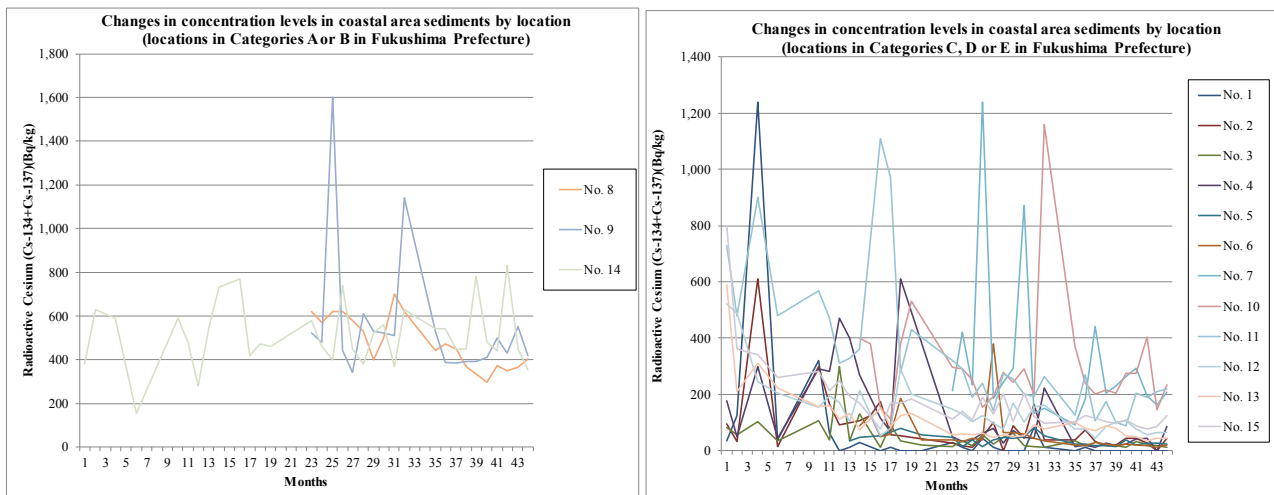
In Fukushima Prefecture, surveys were conducted 20 to 33 times from October 2011 to February 2015 for coastal area sediment samples collected at 15 locations (this analysis excludes the survey results at eight locations where the survey was conducted only once in 2011).

Regarding concentration levels of detected values, one location was categorized into Category A, two locations into Category B, three locations into Category C, five locations into Category D, and four locations into Category E (see Table 4.3-39 and Table 4.3-40).

Concentration levels were generally decreasing at 11 locations but were generally unchanged or varying at four locations. There was no location where an increasing trend was observed.

Table 4.3-39 Categorization of detected values at respective locations
(Fukushima Prefecture: coastal area sediments)

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	1	No.9
B	Upper 5 to 10 percentile	2	No.8, No.14
C	Upper 10 to 25 percentile	3	No.7, No.10, No.11
D	Upper 25 to 50 percentile	5	No.2, No.4, No.12, No.13, No.15
E	Lower than upper 25 to 50 percentile (lower 50%)	4	No.1, No.3, No.5, No.6



(*) Scales of the vertical axes differ in the left and right figures.

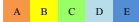
Figure 4.3-21 Changes in concentration levels over the years at respective locations
(Fukushima Prefecture: coastal area sediments)

Table 4.3-40 Detection of radioactive cesium at respective locations (Fukushima Prefecture: coastal area sediments)

Location		Coastal area sediments/Radioactive Cesium (Cs-134+Cs-137) Concentration(Bq/kg)*1																																				Changes	average (*2)	No.	coefficient of variation	Trends (*3)								
No.	Location	FY2011						FY2012						FY2013						FY2014																														
		8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3					
1	Neighboring sea area of Soso Approx. 2,000 m offshore of Tsunashima Fishing Port			35	123	1,240		38				320	62	0	11	30	0	11	0	0				28	12	0	44	10	0	0	0	81	11				0	12	0	0	0	0	0	0	0	0	0			
2	Matsukawaura sea area Around center of Fishing Right Area-1 in Matsukawaura sea area			94	32	610		15				300	164	90		105	123	175	55	53	48				26	18	11	48	101	0	89	45	164	39				38	73	32	17	19	43	45	26	0	44			
3	Neighboring sea area of Soso Approx. 2,000 m offshore of Manogawa River			81	57	102		36				106	38	300	36	131	11	91	35	19				15	36	17	55	23	48	61	16	13	11				35	18	17	20	17	10	31	24	17	12				
4	Neighboring sea area of Haramachi City Approx. 1,000 m offshore of Niida River			177	49	300		44				290	280	470	400	268	114	67	610					51	33	38	61	79	27	70	48	43	221				13	20	12	27	18	22	41	43	0	85				
5	Neighboring sea area of Haramachi City Approx. 1,000 m offshore of Ota River													36	48	53		78	57					47	14	38	15	38	47	44	51	81	54				24	22	18	17	15	38	21	26	26	24				
6	Neighboring sea area of Soso District Approx. 1,000 m offshore of Odaka River															88	127	50	59	187	37				38	31	44	39	380	64	64	59	45	35				20	18	28	22	18	22	21	16	10	21			
7	Neighboring sea area of Soso District Approx. 2,000 m offshore of Ukedo River																							214	420	234	1,240	187	243	294	870	133	152							90	182	440	205	230	263	293	194	163	206	
8	Neighboring sea area of Soso District Approx. 1,000 m offshore of Kumagawa River																							620	570	620	620	580	530	400	500	700	620							440	470	450	368	333	297	374	350	365	403	
9	Neighboring sea area of Soso District Approx. 1,000 m offshore of Tomoka River																							520	480	1,600	440	340	610	530	520	510	1,140							530	388	385	390	390	410	500	430	550	417	
10	Neighboring sea area of Naraha Town Approx. 1,000 m offshore of Kidogawa River														400	380	154	113	380	530				295	290	251	154	191	278	243	290	198	1,160						370	240	201	215	203	274	275	404	144	234		
11	Approx. 1,000 m offshore of Asami River Estuary			730	480	900		480				570	470	310	330	360	1,110	970	277	430				320	290	190	241	143	272	254	202	192	262						127	268	105	173	100	88	205	188	209	219		
12	Approx. 1,000 m offshore of Ohira River Estuary			520	490	246		205				153	196	170	102	213	54	80	290	200				149	131	102	125	96	75	167	100	155	161						75	76	43	84	101	105	76	55	64	65		
13	Neighboring sea area of Iwaki City Approx. 1,500 m offshore of Natsui River			590	211	310		223				156	159	113	133	74	150	86	125	132				55	60	55	63	47	57	49	53	90	76						101	80	70	89	78	54	50	35	45	44		
14	Onahama Port Approx. 400 m north of Nichibouhatei No. 2			380	630	590		156				590	480	280	550	730	770	420	470	460				580	460	400	740	450	380	520	560	370	630						540	540	450	450	780	480	440	830	449	354		
15	Iwaki coastal sea area Approx. 1,000 m offshore of Binda River			800	360	340		260				280	214	249	193	167	77	168	169	184				112	139	108	189	129	200	104	205	122	98						104	124	114	102	96	108	88	75	84	125		
		total number of samples		433	Detection times		413																																					224	average					

*1: Blank cells are locations where samples were not collected. The result "Not detectable" is indicated as "0."

*2: Arithmetic Average; calculated by assuming ND=0. Color codes show categories (see the right).



*3: Results of the analysis of trends at respective locations using the method explained on P.60
 ↘ Decreasing ↗ Increasing ~ Unchanged ⚡ Varying

4) Ibaraki Prefecture

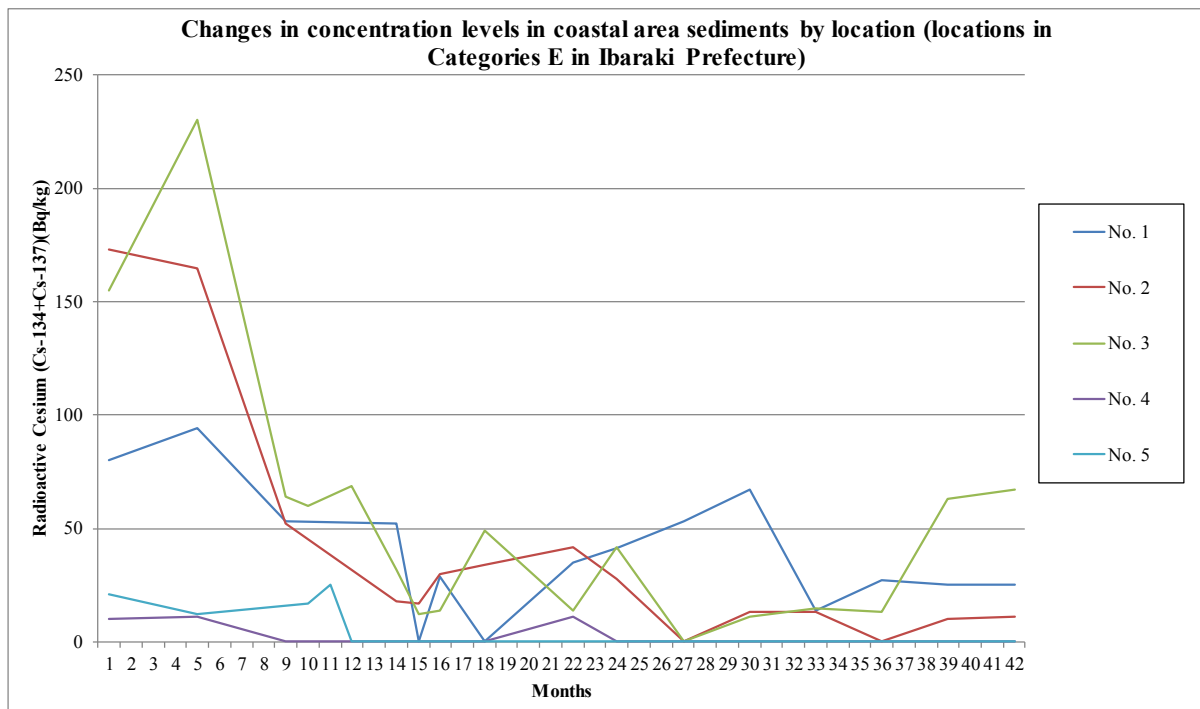
In Ibaraki Prefecture, surveys were conducted 15 to 17 times from October 2011 to February 2015 for coastal area sediment samples collected at five locations.

Regarding concentration levels of detected values, all five locations were categorized into Category E (see Table 4.3-41 and Table 4.3-42).

Concentration levels were generally decreasing at four locations but were generally varying at one location.

**Table 4.3-41 Categorization of detected values at respective locations
(Ibaraki Prefecture: coastal area sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations			
A	Upper 5 percentile	0	(None)			
B	Upper 5 to 10 percentile	0	(None)			
C	Upper 10 to 25 percentile	0	(None)			
D	Upper 25 to 50 percentile	0 <td (None)	E	Lower than upper 25 to 50 percentile (lower 50%)	5	No.1, No.2, No.3, No.4, No.5
E	Lower than upper 25 to 50 percentile (lower 50%)	5	No.1, No.2, No.3, No.4, No.5			



**Figure 4.3-22 Changes in concentration levels over the years at respective locations
(Ibaraki Prefecture: coastal area sediments)**

5) Chiba Prefecture and Tokyo Metropolis

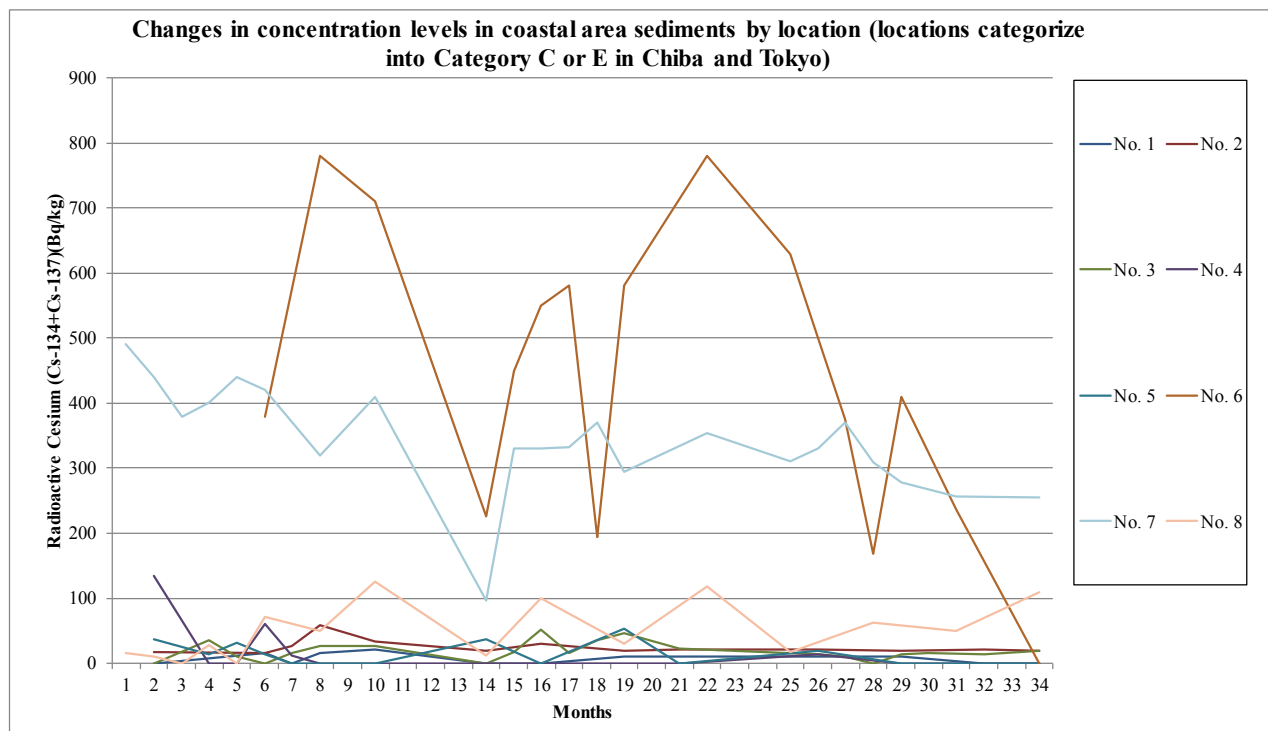
In Chiba Prefecture and Tokyo Metropolis, surveys were conducted 13 to 22 times from May 2012 to February 2015 for coastal area sediment samples collected at eight locations in total.

Regarding concentration levels of detected values, two locations were categorized into Category C and six locations were categorized into Category E (see Table 4.3-43 and Table 4.3-44).

Concentration levels were generally decreasing at two locations but were generally unchanged or varying at six locations.

**Table 4.3-43 Categorization of detected values at respective locations
(Chiba Prefecture and Tokyo Metropolis: coastal area sediments)**

Category	Percentile (percentile in all detected values)	Number of locations	Locations
A	Upper 5 percentile	0	(None)
B	Upper 5 to 10 percentile	0	(None)
C	Upper 10 to 25 percentile	2	No.6, No.7
D	Upper 25 to 50 percentile	0	(None)
E	Lower than upper 25 to 50 percentile (lower 50%)	6	No.1, No.2, No.3, No.4, No.5, No.8



**Figure 4.3-23 Changes in concentration levels over the years at respective locations
(Chiba Prefecture and Tokyo Metropolis: coastal area sediments)**

(3) Conclusion

Concentration levels of detected values for sediment samples from public water areas (rivers, lakes, and coastal areas) and their changes shown so far are summarized as follows (see Figure 4.3-24 and Table 4.3-45).

1) Concentration levels of detected values

• Rivers

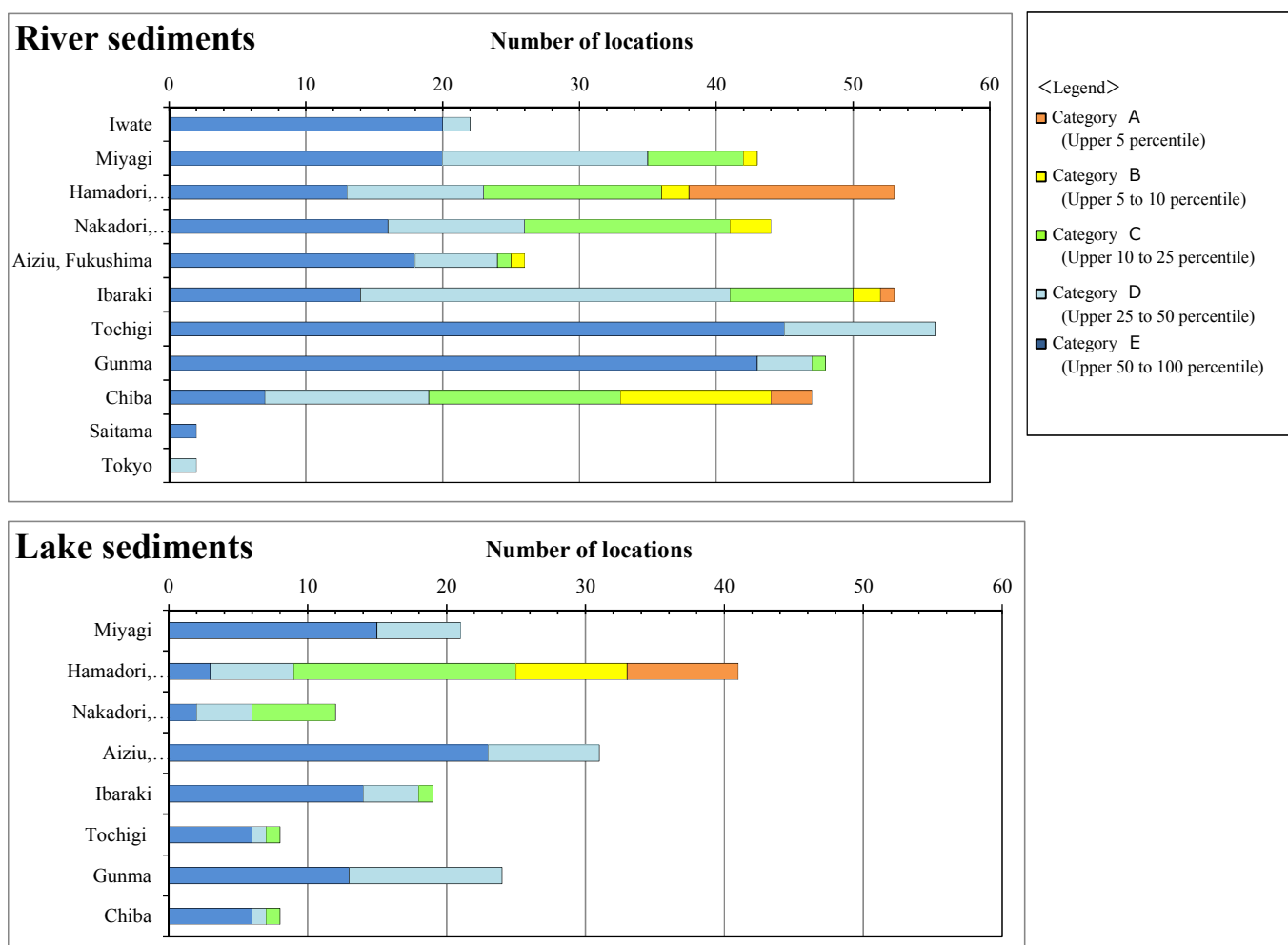
Within all surveyed locations (396 locations in total), the number of locations categorized into Category A or B, which fall under the upper 10%, was the largest in Hamadori in Fukushima Prefecture (17 locations). Such locations were also found in Miyagi Prefecture, Nakadori and Aizu in Fukushima Prefecture, Ibaraki Prefecture and Chiba Prefecture.

• Lakes

Locations categorized into Category A or B were found in Hamadori in Fukushima Prefecture.

• Coastal areas

Locations categorized into Category A or B were found in Miyagi and Fukushima Prefectures.



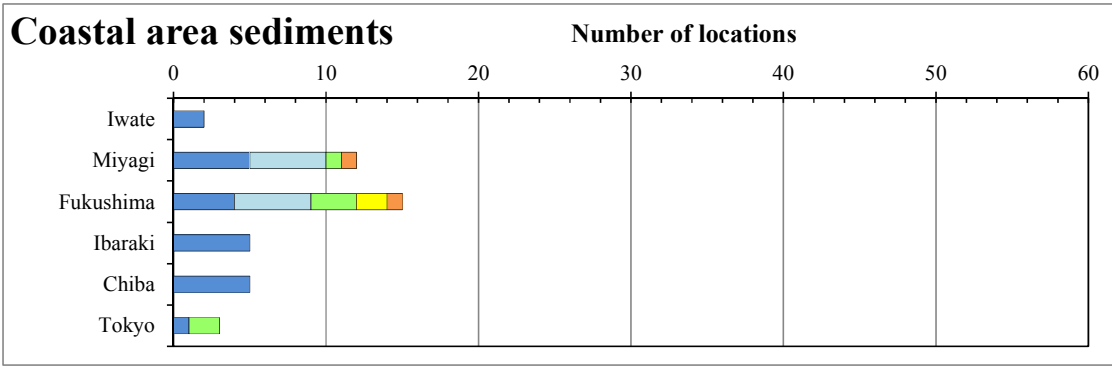


Figure 4.3-24 Categorization by concentration levels of detected values for sediment samples
 (upper: rivers; middle: lakes; lower: coastal areas)
 (* Figure 4.3-24 shows the aforementioned Table 3.1-1 graphically.)

2) Changes in detected values

• Rivers

A decreasing trend was observed at most locations.

• Lakes

Detected values were generally decreasing or unchanged at most locations except for some locations showing fluctuations. An increasing trend was also observed at several locations.

• Coastal areas

A decreasing trend was observed at most locations except for some locations showing fluctuations.

Table 4.3-45 Changes in detected values for sediment samples from public water areas (rivers, lakes, and coastal areas)

<Rivers>

Trends	Number of locations												
	Iwate	Miyagi	Fukushima			Ibaraki	Tochigi	Gunma	Chiba	Saitama	Tokyo	Total	
			Hamadori Area	Nakadori Area	Aizu							Number of locations	Percentage
Decreasing	17	34	41	40	18	45	38	33	34	2	1	303	76.5
Unchanged	0	1	2	1	4	4	1	1	6	0	1	21	5.3
Varying	5	8	10	3	4	4	17	14	7	0	0	72	18.2
Increasing	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	22	43	53	44	26	53	56	48	47	2	2	396	100.0

<Lakes>

Trends	Number of locations									
	Miyagi	Fukushima			Ibaraki	Tochigi	Gunma	Chiba	Total	
		Hamadori Area	Nakadori Area	Aizu					Number of locations	Percentage
Decreasing	12	21	4	4	11	1	4	6	63	38.4
Unchanged	2	4	1	9	3	0	7	2	28	17.1
Varying	7	13	5	15	4	4	8	0	56	34.1
Increasing	0	3	2	3	1	3	5	0	17	10.4
Total	21	41	12	31	19	8	24	8	164	100.0

<Coastal areas>

Trends	Number of locations							
	Iwate	Miyagi	Fukushima	Ibaraki	Chiba	Tokyo	Total	
							Number of locations	Percentage
Decreasing	0	3	11	4	1	1	20	47.6
Unchanged	1	2	1	0	1	0	5	11.9
Varying	1	6	3	1	3	2	16	38.1
Increasing	0	1	0	0	0	0	1	2.4
Total	2	12	15	5	5	3	42	100.0

3) Summary by prefecture

Concentration levels of detected values and their changes are summarized by prefecture as follows (see Figures 4.3-25 to 4.3-27).

i. Iwate Prefecture

- Surveyed locations for rivers were all categorized into Category D or E. Concentration levels were relatively low as a whole, and a decreasing trend was observed at most locations.
- Surveyed locations for coastal areas were all categorized into Category E. Concentration levels were relatively low as a whole, and were generally unchanged or varying at all locations.

ii. Miyagi Prefecture

- Over 80% of surveyed locations for rivers were categorized into Category D or E, and concentration levels were relatively low as a whole. Some locations in the lower reaches were categorized into Category B or C. A decreasing trend was observed at most locations.
- Surveyed locations for lakes were all categorized into Category D or E, and concentration levels were relatively low as a whole. A decreasing trend was observed at most locations except for several locations showing fluctuations.
- Over 80% of surveyed locations for coastal areas were categorized into Category D or E, and concentration levels were relatively low as a whole. There was a location categorized into Category A in the Sendai Port. Concentration levels were generally decreasing or unchanged at most locations except for several locations showing fluctuations.

iii. Hamadori, Fukushima Prefecture

- Approximately 60% of surveyed locations for rivers were categorized into Category A, B, or C, and concentration levels were relatively high as a whole. Locations categorized into Category A or B were found in the north and northwest of the Fukushima Daiichi NPS, and locations categorized into Category C were in the northern part and in the southern part of the prefecture. A decreasing trend was observed at most locations.
- Approximately 80% of surveyed locations for lakes were categorized into Category A, B, or C, and concentration levels were relatively high as a whole. Locations categorized into Category A or B were found in the northwest of the Fukushima Daiichi NPS. A decreasing trend was observed generally at most locations except for several locations showing fluctuations.
- 60% of surveyed locations for coastal areas were categorized into Category D or E and the rest were categorized into Category A, B, or C. Locations categorized into Category A or B were found in coastal areas within 10 km from the Fukushima Daiichi NPS and off the Onahama Port located in the southern part of the prefecture. Concentration levels were mostly decreasing with some fluctuations.

iv. Nakadori, Fukushima Prefecture

- Approximately 60% of surveyed locations for rivers were categorized into Category D or E and the rest were categorized into Category B or C. Locations categorized into Category B or C were found from the center of the Abukuma River to the northern part of its tributaries. A decreasing trend was observed at

most locations.

- 50% of surveyed locations for lakes were categorized into Category D or E and the rest were categorized into Category C. Locations categorized into Category C were found from the upper to the lower reaches of the Abukuma River. Concentration levels were generally increasing at two locations and were generally decreasing or unchanged at five other locations with some fluctuations observed at several locations.

v. Aizu, Fukushima Prefecture

- Over 90% of surveyed locations for rivers were categorized into Category D or E, and concentration levels were relatively low as a whole. A location categorized into Category B was found in the northwestern part of the prefecture. Concentration levels were mostly decreasing with some fluctuations.
- Surveyed locations for lakes were all categorized into Category D or E, and concentration levels were relatively low as a whole. Many locations showed fluctuations, but concentration levels were generally increasing at three locations and were generally unchanged or decreasing at 13 other locations.

vi. Ibaraki Prefecture

- Over 70% of surveyed locations for rivers were categorized into Category D or E and the rest were categorized into Category A, B, or C. Locations categorized into Category A or B were found in rivers flowing into Lake Kasumigaura. A decreasing trend was observed at most locations.
- Over 90% of surveyed locations for lakes were categorized into Category D or E, and concentration levels were relatively low as a whole. A location categorized into Category C was found in the northern part of the prefecture. Concentration levels were mostly decreasing or unchanged with some fluctuations.
- Surveyed locations for coastal areas were all categorized into Category E, and concentration levels were relatively low as a whole. A decreasing trend was observed at most locations.

vii. Tochigi Prefecture

- Surveyed locations for rivers were all categorized into Category D or E, and concentration levels were relatively low as a whole. Concentration levels were mostly decreasing with some fluctuations.
- Over 80% of surveyed locations for lakes were categorized into Category D or E, and concentration levels were relatively low as a whole. A location categorized into Category C was found in the northern part of the prefecture. Concentration levels were generally increasing at three locations and were generally decreasing at one location with some fluctuations observed at several locations.

viii. Gunma Prefecture

- Over 90% of surveyed locations for rivers were categorized into Category D or E, and concentration levels were relatively low as a whole. A location categorized into Category C was found in the lower reaches of the Watarase River area. Concentration levels were mostly decreasing with some fluctuations observed at several locations.
- Surveyed locations for lakes were all categorized into Category D or E, and concentration levels were relatively low as a whole. Concentration levels were generally increasing at five locations and were generally unchanged or decreasing at 11 locations with some fluctuations observed at several locations.

ix. Chiba and Saitama Prefectures and Tokyo Metropolis

- Over 50% of surveyed locations for rivers were categorized into Category A, B, or C, and concentration levels were relatively high as a whole. Locations categorized into Category A or B were found in rivers flowing into Lake Teganuma or Lake Inbanuma and in part of the tributaries to the Edogawa River. Concentration levels were mostly decreasing with some fluctuations.
- Over 80% of surveyed locations for lakes were categorized into Category D or E, and concentration levels were relatively low as a whole. A location categorized into Category C was found in Lake Teganuma. A decreasing trend was observed at most locations.
- Over 70% of surveyed locations for coastal areas were categorized into Category E and the rest were categorized into Category C. Locations categorized into Category C were found off the mouths of the Arakawa River, Kyuedogawa River, and Sumida River. Concentration levels were generally decreasing or unchanged at most locations except for several locations showing fluctuations.

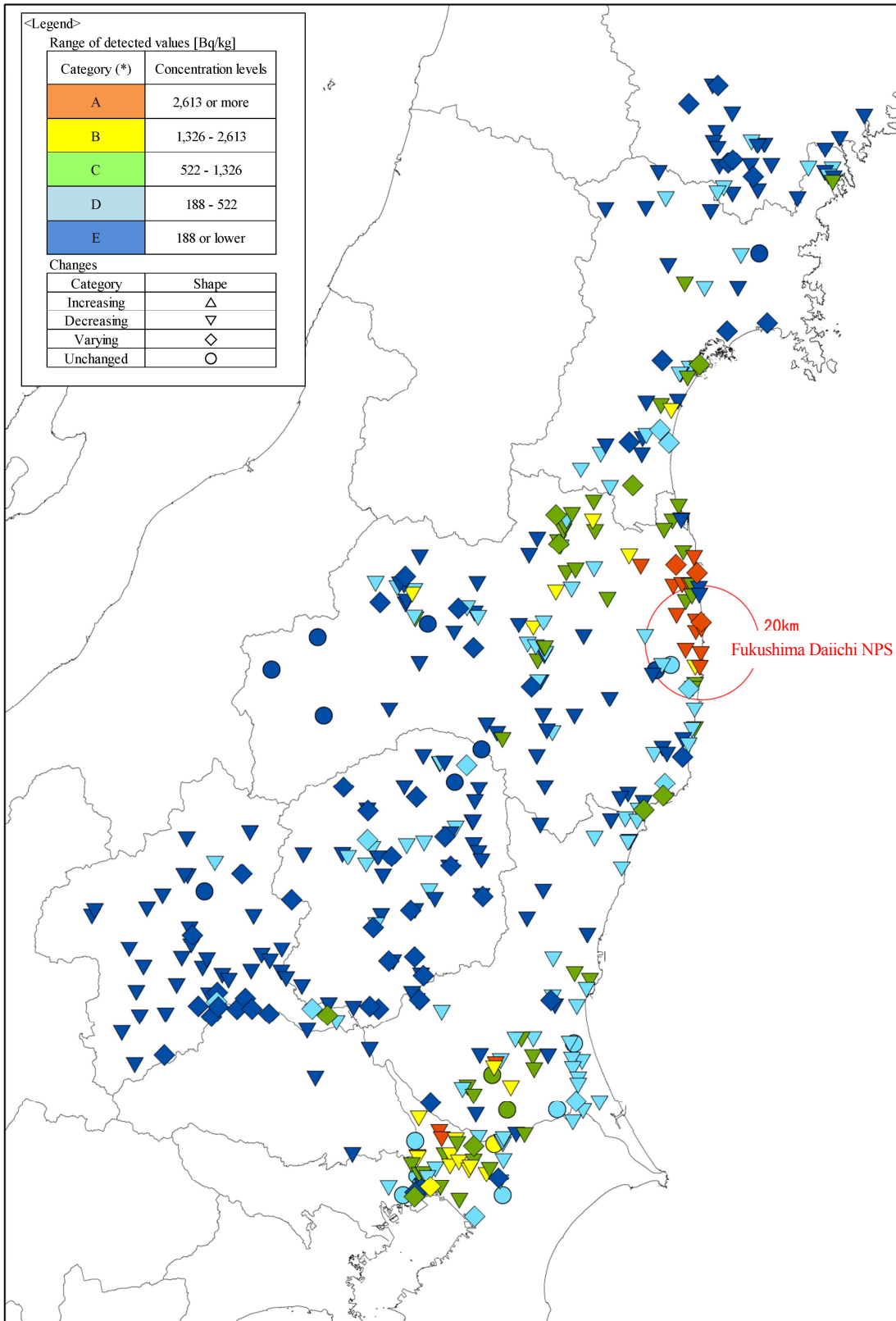


Figure 4.3-25 Categorization of and changes in concentration levels for river sediment samples from public water areas

(*) Categories A to E show relative concentration levels for river sediment samples and cannot be compared with those for lake sediment samples or coastal area sediment samples.

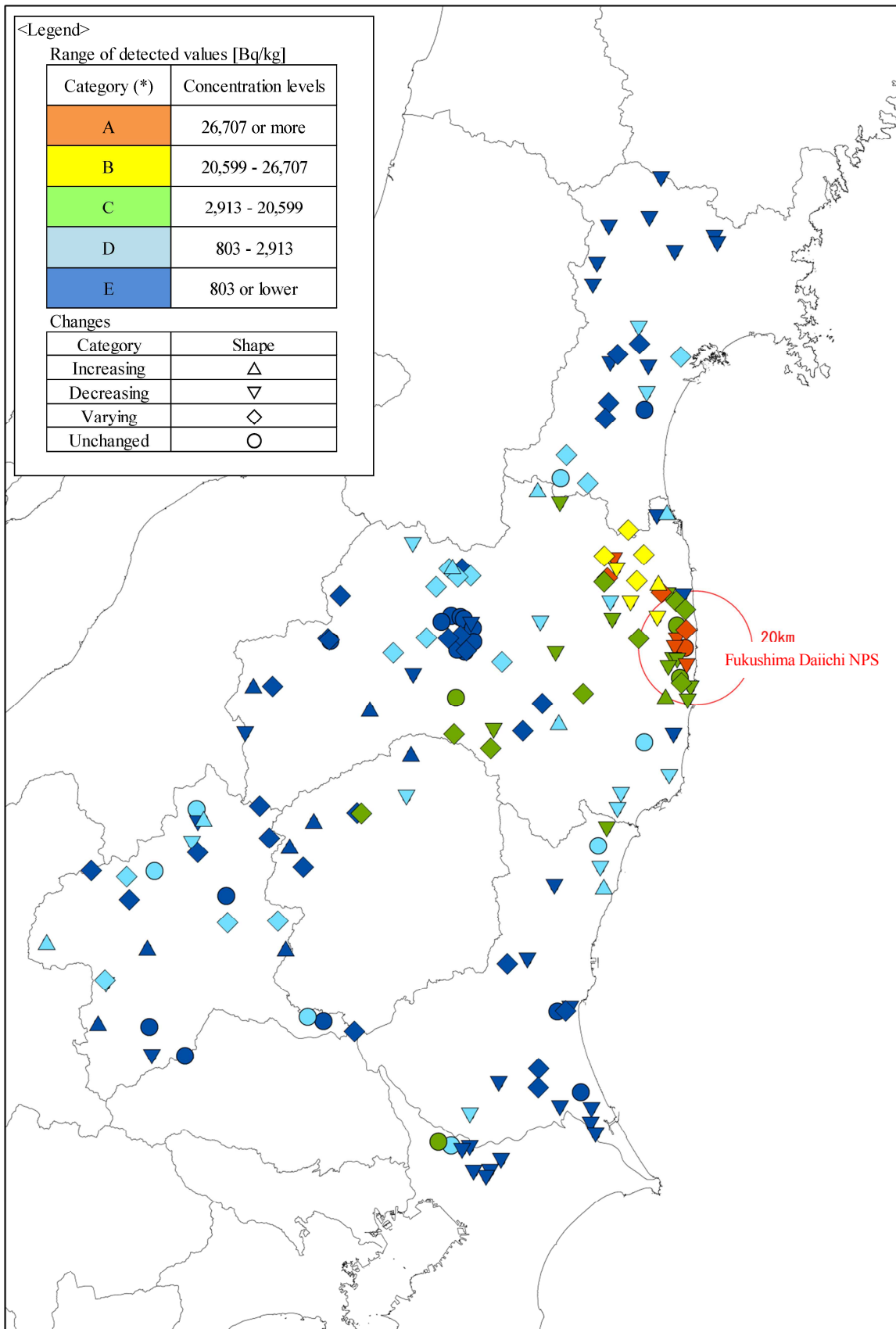


Figure 4.3-26 Categorization of and changes in concentration levels for lake sediment samples from public water areas

(*) Categories A to E show relative concentration levels for lake sediment samples and cannot be compared with those for river sediment samples or coastal area sediment samples.

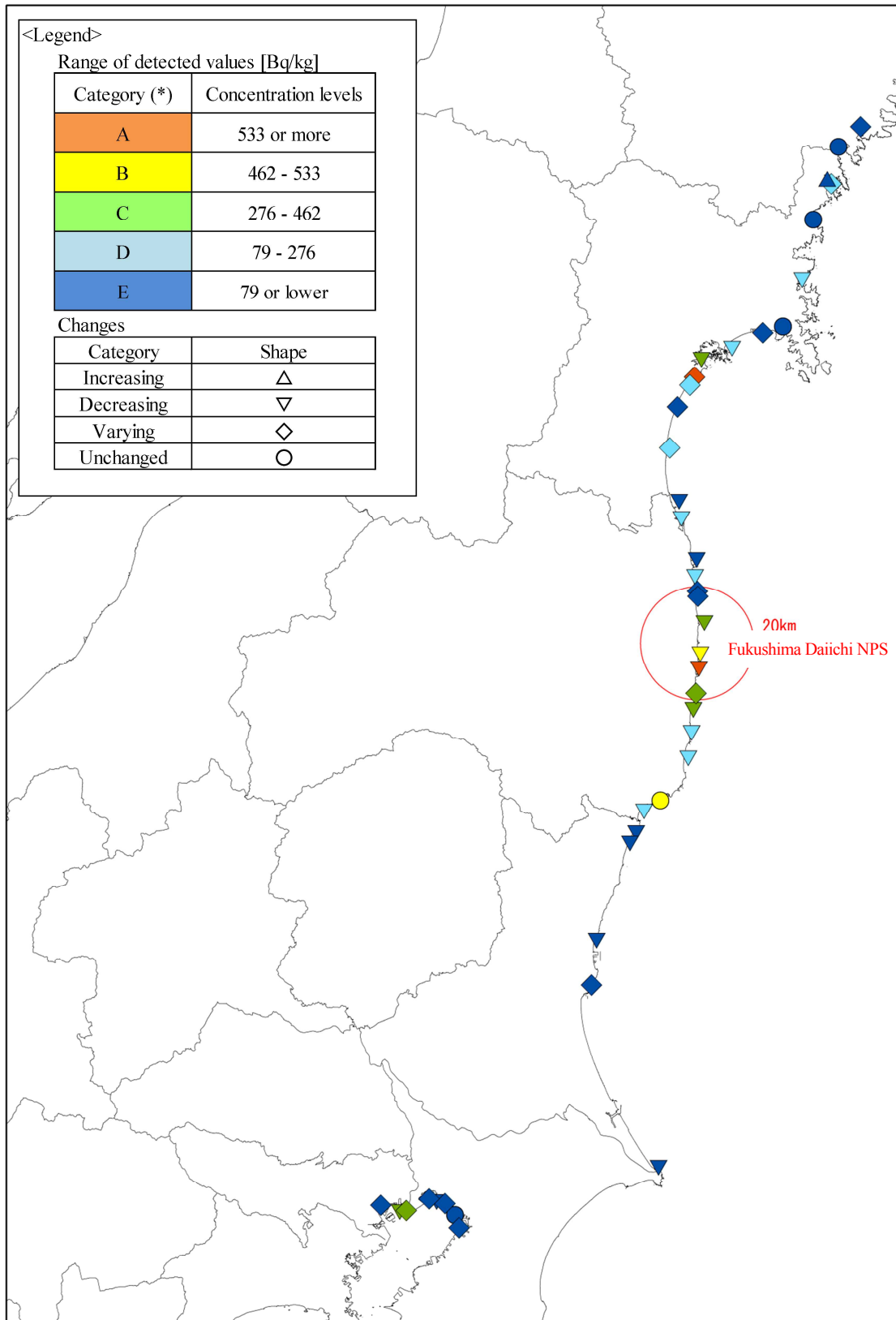


Figure 4.3-27 Categorization of and changes in concentration levels for coastal area sediment samples from public water areas

(*) Categories A to E show relative concentration levels for coastal area sediment samples and cannot be compared with those for river sediment samples or lake sediment samples

5. Results (Radionuclides Other than Radioactive Cesium)

5.1 Radioactive iodine (I-131)

(1) Water

1) Public water areas

Detection of radioactive iodine (I-131) in water samples from public water areas (rivers, lakes, and coastal areas) were as shown in Table 5.1-1.

Surveys were conducted for public water areas with regard to approx. 3,000 river water samples, approx. 1,400 lake water samples, and approx. 700 coastal area water samples in total in FY2011 and FY2012, but I-131 was not detectable at any surveyed locations (detection limit: 1 Bq/L).

2) Groundwater

Detection of radioactive iodine (I-131) in groundwater samples was as shown in Table 5.1-2.

Surveys were conducted with regard to approx. 3,800 groundwater samples from FY2011 to FY2014, but I-131 was not detectable at any surveyed locations (detection limit: 1 Bq/L).

(2) Sediments

Detection of radioactive iodine (I-131) in sediment samples from public water areas (rivers, lakes, and coastal areas) were as shown in Table 5.1-3.

Surveys were conducted for public water areas with regard to approx. 3,000 river sediment samples, approx. 900 lake sediment samples, and approx. 400 coastal area sediment samples in total in FY2011 and FY2012, but I-131 was not detectable at any surveyed locations (detection limit: 10 Bq/kg).

Table 5.1-1 Detection of I-131 in water samples from public water areas (rivers, lakes, and coastal areas)

Property	Prefecture	FY2011		FY2012		Total	
		Number of samples	Detection times	Number of samples	Detection times	Number of samples	Detection times
Rivers	Iwate	18	0	64	0	82	0
	Miyagi	114	0	204	0	318	0
	Yamagata	10	0	0	-	10	0
	Fukushima	452	0	854	0	1,306	0
	Ibaraki	128	0	214	0	342	0
	Tochigi	161	0	277	0	438	0
	Gunma	90	0	216	0	306	0
	Saitama	2	0	8	0	10	0
	Chiba	82	0	202	0	284	0
	Tokyo	3	0	12	0	15	0
	Total	1,060	0	2,051	0	3,111	0
Lakes	Miyagi	34	0	90	0	124	0
	Yamagata	4	0	0	-	4	0
	Fukushima	211	0	581	0	792	0
	Ibaraki	48	0	93	0	141	0
	Tochigi	24	0	54	0	78	0
	Gunma	51	0	144	0	195	0
	Chiba	32	0	50	0	82	0
	Total	404	0	1,012	0	1,416	0
Coastal areas	Iwate	5	0	8	0	13	0
	Miyagi	94	0	96	0	190	0
	Fukushima	116	0	189	0	305	0
	Ibaraki	45	0	62	0	107	0
	Chiba	0	-	62	0	62	0
	Tokyo	0	-	38	0	38	0
	Total	260	0	455	0	715	0

Table 5.1-2 Detection of I-131 in groundwater samples

Prefecture	FY2011		FY2012		FY2013		FY2014		Total	
	Number of samples	Detection times	Number of samples	Detection times	Number of samples	Detection times	Number of samples	Detection times	Number of samples	Detection times
Iwate	42	0	44	0	44	0	22	0	152	0
Miyagi	79	0	44	0	48	0	24	0	195	0
Yamagata	79	0	0	0	0	0	0	0	79	0
Fukushima	540	0	543	0	766	0	771	0	2620	0
Ibaraki	89	0	54	0	54	0	27	0	224	0
Tochigi	76	0	54	0	54	0	27	0	211	0
Gunma	40	0	40	0	42	0	21	0	143	0
Chiba	54	0	46	0	46	0	23	0	169	0
Total	999	0	825	0	1054	0	915	0	3793	0

Table 5.1-3 Detection of I-131 in sediment samples from public water areas (rivers, lakes, and coastal areas)

Property	Prefecture	FY2011		FY2012		Total	
		Number of samples	Detection times	Number of samples	Detection times	Number of samples	Detection times
Rivers	Iwate	18	0	64	0	82	0
	Miyagi	113	0	199	0	312	0
	Yamagata	10	0	0	-	10	0
	Fukushima	441	0	847	0	1,288	0
	Ibaraki	128	0	214	0	342	0
	Tochigi	159	0	275	0	434	0
	Gunma	88	0	211	0	299	0
	Saitama	2	0	8	0	10	0
	Chiba	83	0	199	0	282	0
	Tokyo	2	0	12	0	14	0
	Total	1,044	0	2,029	0	3,073	0
Lakes	Miyagi	24	0	58	0	82	0
	Yamagata	2	0	0	-	2	0
	Fukushima	147	0	389	0	536	0
	Ibaraki	24	0	48	0	72	0
	Tochigi	12	0	27	0	39	0
	Gunma	26	0	72	0	98	0
	Chiba	16	0	32	0	48	0
	Total	251	0	626	0	877	0
Coastal areas	Iwate	3	0	4	0	7	0
	Miyagi	52	0	48	0	100	0
	Fukushima	80	0	97	0	177	0
	Ibaraki	28	0	31	0	59	0
	Chiba	0	-	31	0	31	0
	Tokyo	0	-	19	0	19	0
	Total	163	0	230	0	393	0

5.2 Radioactive strontium (Sr-90 and Sr-89)

(1) Public water areas

1) Outline

Regarding radioactive strontium, surveys of Sr-90 were conducted with regard to sediment samples from public water areas (rivers, lakes, and coastal areas) from FY2011 to FY2014, while a survey of Sr-89 was conducted with regard to sediment samples from public water areas (rivers and lakes) in FY2011. Details and results of these surveys are as shown in Table 5.2-1 (detection limit: approx. 1 Bq/kg (dry) for Sr-90 and approx. 2 Bq/kg (dry) for Sr-89).

Sr-90 was detected as detailed below.

A survey of Sr-89 was conducted with regard to 22 samples (13 river sediment samples and nine lake sediment samples) only in FY2011 but Sr-89 was not detectable in any of these samples.

2) Detection of Sr-90 in sediment samples

i. River sediments

Surveys of Sr-90 were conducted with regard to approx. 120 river sediment samples in four years and Sr-90 was detected in 67 samples (detection rate: approx. 55%).

The detection rate was high for Fukushima Prefecture and was also relatively high for other prefectures. Detected values in FY2014 were below 1 Bq/kg (dry) except for Fukushima Prefecture (see Table 5.2-1).

Sr-90 was continuously detected since FY2011 at some locations in the Ota River and the Ukedo River in Fukushima Prefecture, but detected values gradually decreased to fall below 2 Bq/kg (dry) in FY2014 (see Figure 5.2-1).

ii. Lake sediments

Surveys of Sr-90 were conducted with regard to approx. 180 lake sediment samples in four years and Sr-90 was detected in 168 samples (detection rate: approx. 90%) (see Table 5.2-1).

Sr-90 was continuously detected in all surveyed prefectures until FY2014.

In agricultural reservoirs in the Soso district in Fukushima Prefecture, Sr-90 was detected at levels exceeding 40 Bq/kg (dry) at the maximum. However, detected values were gradually decreasing (see Figure 5.2-1).

iii. Coastal area sediments

Surveys of Sr-90 were conducted with regard to approx. 80 coastal area sediment samples in four years and Sr-90 was detected three times in Fukushima Prefecture (see Table 5.2-1). Detected values were from 0.3 to 0.6 Bq/kg (dry): lower than in the cases of river sediment samples and lake sediment samples.

Table 5.2-1 Detection of Sr-90 and Sr-89 in river sediment samples, lake sediment samples, and coastal area sediment samples

○ Sr-90

Property	Prefecture	FY2011				FY2012				FY2013				FY2014				Total			
		Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/kg(dry)]	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/kg(dry)]	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/kg(dry)]	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/kg(dry)]	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/kg(dry)]
Rivers	Miyagi	2	2	100.0	0.40 - 1.1	7	1	14.3	ND - 1.2	5	3	60.0	ND - 0.56	4	3	75.0	ND - 0.52	18	9	50.0	ND - 1.2
	Fukushima	7	7	100.0	1.2 - 4.1	25	15	60.0	ND - 12	16	10	62.5	ND - 2.9	14	9	64.3	ND - 1.5	62	41	66.1	ND - 12
	Ibaraki	1	1	100.0	1.6 - 1.6	4	1	25.0	ND - 1.8	6	4	66.7	ND - 1.8	6	2	33.3	ND - 0.89	17	8	47.1	ND - 1.8
	Tochigi	1	1	100.0	1.3 - 1.3	2	0	0.0	-	2	1	50.0	ND - 0.23	2	1	50.0	ND - 0.53	7	3	42.9	ND - 1.3
	Gunma	1	1	100.0	0.70 - 0.70	2	0	0.0	-	2	1	50.0	ND - 0.44	1	0	0.0	-	6	2	33.3	ND - 0.70
	Chiba	1	1	100.0	1.1 - 1.1	4	0	0.0	-	4	2	50.0	ND - 0.49	4	1	25.0	ND - 0.40	13	4	30.8	ND - 1.1
	Total	13	13	100.0	0.4 - 4.1	44	17	38.6	ND - 12	35	21	60.0	ND - 2.9	31	16	51.6	ND - 1.5	123	67	54.5	ND - 12
Lakes	Miyagi	1	1	100.0	1.6 - 1.6	3	2	66.7	ND - 2.1	5	5	100.0	0.3 - 2.2	6	5	83.3	ND - 0.96	15	13	86.7	ND - 2.2
	Fukushima	3	3	100.0	3.3 - 6.8	41	41	100.0	2.1 - 93	40	40	100.0	0.7 - 55	39	39	100.0	0.70 - 50	123	123	100.0	0.7 - 93
	Ibaraki	2	2	100.0	0.70 - 3.3	6	1	16.7	ND - 7.0	6	5	83.3	ND - 5.2	6	6	100.0	0.57 - 3.0	20	14	70.0	ND - 7.0
	Tochigi	1	1	100.0	1.3 - 1.3	2	1	50.0	ND - 1.6	2	2	100.0	0.74 - 0.93	2	2	100.0	1.0 - 1.1	7	6	85.7	ND - 1.6
	Gunma	1	1	100.0	2.0 - 2	2	2	100.0	1.9 - 2.2	2	1	50.0	ND - 1.7	2	2	100.0	1.5 - 1.7	7	6	85.7	ND - 2.2
	Chiba	1	1	100.0	1.4 - 1.4	4	1	25.0	ND - 4.4	2	1	50.0	ND - 1.8	4	3	75.0	ND - 2.5	11	6	54.5	ND - 4.4
	Total	9	9	100.0	0.7 - 6.8	58	48	82.8	ND - 93	57	54	94.7	ND - 55	59	57	96.6	ND - 50	183	168	91.8	ND - 93
Coastal areas	Miyagi	0	0	-	-	2	0	0.0	-	4	0	0.0	-	2	0	0.0	-	8	0	0.0	-
	Fukushima	0	0	-	-	21	0	0.0	-	30	1	3.3	ND - 0.33	30	2	6.7	ND - 0.58	81	3	3.7	ND - 0.58
	Tokyo Metropolis	0	0	-	-	2	0	0.0	-	0	0	-	-	0	0	-	-	2	0	0.0	-
	Total	0	0	-	-	25	0	0.0	-	34	1	2.9	ND - 0.33	32	2	6.3	ND - 0.58	81	3	3.7	ND - 0.58

ND = Not detectable

○ Sr-89 (FY2011)

Prefecture	Rivers		Lake	
	Number of samples	Detection times	Number of samples	Detection times
Miyagi	2	0	1	0
Fukushima	7	0	3	0
Ibaraki	1	0	2	0
Tochigi	1	0	1	0
Gunma	1	0	1	0
Chiba	1	0	1	0
Total	13	0	9	0

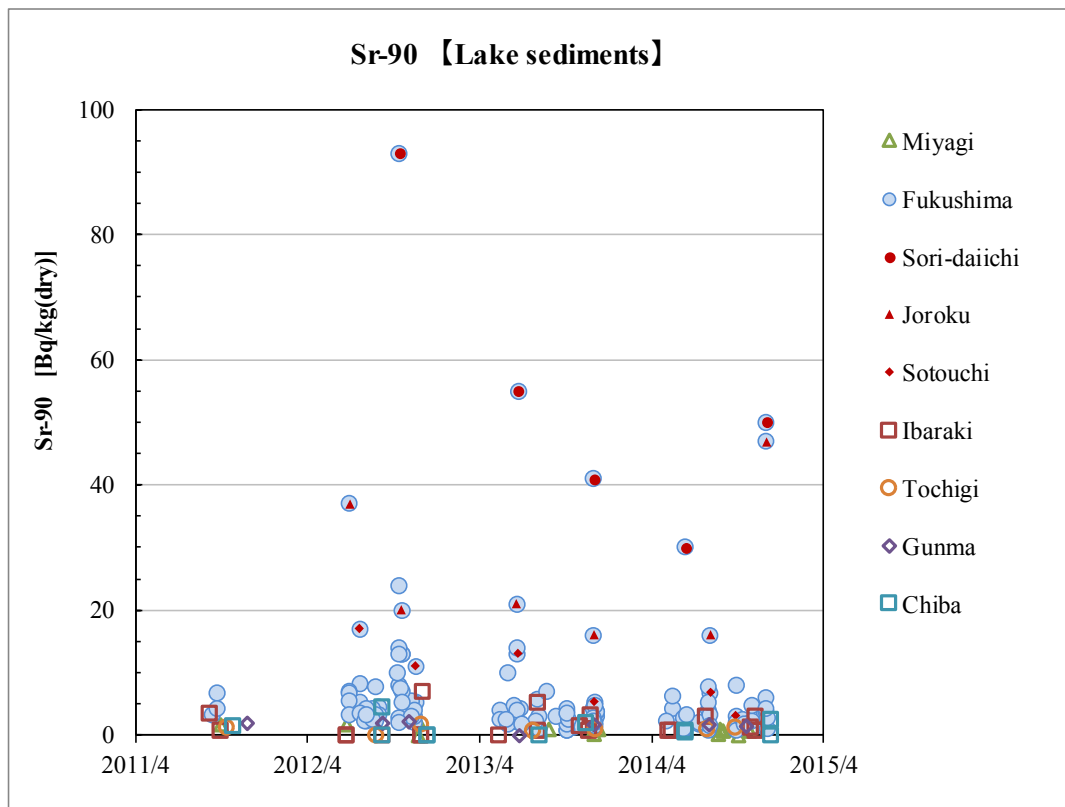
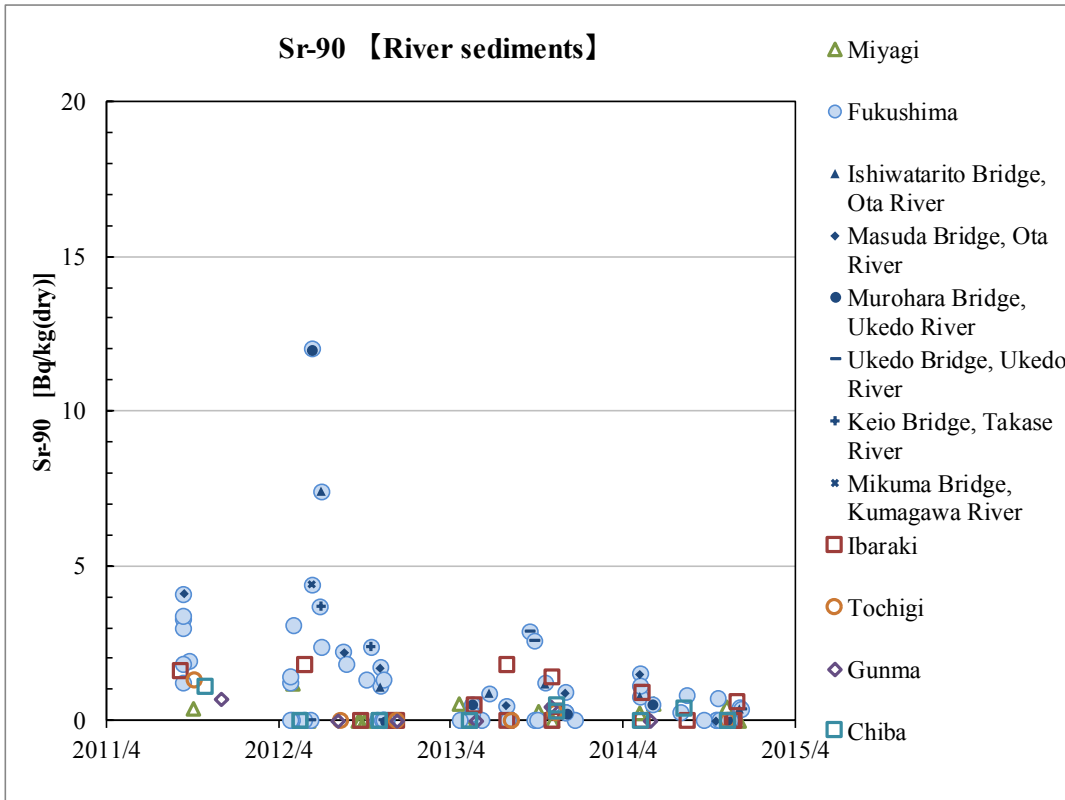


Figure 5.2-1 Detection of Sr-90 in sediment samples from public water areas (upper: rivers; lower: lakes)

(2) Groundwater

Surveys of Sr-89 and Sr-90 were conducted with regard to approx. 190 groundwater samples collected in Fukushima Prefecture from January 2012 to January 2015.

The outline of the results of these surveys is as shown in Table 5.2-2. Detected values of Sr-89 and Sr-90 were all below the detection limit (1 Bq/L).

The detection limit for Sr-90 was set at 0.0002 Bq/L for the FY2011 survey (for calendar year 2012) and Sr-90 was detected in all of the eight samples at levels between 0.0004 and 0.0029 Bq/L. The detection limit for Sr-89 was set at 0.001 Bq/L for the FY2011 survey (for calendar year 2012) and detected values for all of the eight samples were below the detection limit.

Table 5.2-2 Detection of Sr-89 and Sr-90 in groundwater samples (all collected in Fukushima Prefecture)

Financial year	Sr-90				Sr-89			
	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/L](^{*1})	Number of samples [A]	Number of detections [B]	Detection rate (B/A) (%)	Range of measured values [Bq/L](^{*1})
FY2011	8	0	0.0	-	8	0	0.0	-
FY2012	60	0	0.0	-	60	0	0.0	-
FY2013	77	0	0.0	-	77	0	0.0	-
FY2014	48	0	0.0	-	48	0	0.0	-
Total	193	0	0.0	-	193	0	0.0	-

*1: Results were compiled by setting the detection limit at 1 Bq/L.

In reality, the detection limit was set at 0.0002 Bq/L and at 0.001 Bq/L for Sr-90 and Sr-89, respectively, for the FY2011 survey, and was set at 1 Bq/L for both Sr-90 and Sr-89 for surveys in FY2012 onward (see the main text).

5.3 Other γ -ray emitting radionuclides

Apart from the aforementioned radionuclides (Cs-134, Cs-137, I-131, Sr-89, and Sr-90), measurement results for water samples and sediment samples using a germanium semiconductor detector were analyzed from 2011 to 2013 to obtain activity concentrations of accident-derived radionuclides (Ag-110m, Te-129m, Nb-95, Sb-125, and Ce-144, etc.) and major naturally occurring radionuclides such as K-40.

The outline of the analysis results are as shown in Table 5.3-1. Artificial radionuclides were not detectable in water samples, but Ag-110m and Sb-125 were detected in sediment samples at detection rates as low as below 1%. In 2013, neither of these two types of radionuclides were detectable.

Six types of naturally occurring radionuclides (K-40, Pb-212, Pb-214, Tl-208, Ac-228, and Bi-214) were detected as shown in Table 5.3-1. However, K-40 is a naturally occurring radionuclide first incorporated at the time of the formation of the earth, and the other five are all uranium or thorium series naturally occurring radionuclides existing widely within the earth's crust.

On the other hand, Ag-110m and Sb-125 are artificial radionuclides that are generated at nuclear power stations, etc. Therefore, their emitting sources are examined below.

Table 5.3-1 Detection of other radionuclides

<Water>

Fiscal year	Number of samples	Major detected artificial radionuclide		Major detected naturally occurring radionuclide	
		Type	Detection rate and detected values	Type	Detection rate
FY2011	1,755	—	—	K-40	10%
FY2012	3,518	—	—	K-40	6%
FY2013	3,860	—	—	K-40	13%
FY2014	3,856	—	—	K-40	10%

<Sediments> (detection limits: 7 - 180 Bq/kg for Ag-110m and 130 - 330 Bq/kg for Sb-125)

Fiscal year	Number of samples	Major detected artificial radionuclide		Major detected naturally occurring radionuclide	
		Type	Detection rate and detected values	Type	Detection rate
FY2011	1,559	Ag-110m	4 samples (0.26%) 46 - 170 Bq/kg	K-40 Pb-212 Pb-214 Tl-208	79% 41% 16% 14%
FY2012	2,885	Ag-110m	26 samples (0.90%) 7.9 - 350 Bq/kg	Ac-228 Bi-214 K-40	41% 43% 97%
		Sb-125	3 samples (0.10%) 140 - 420 Bq/kg	Pb-212 Pb-214 Tl-208	75% 44% 39%
FY2013	3,062	—	—	Ac-228 Bi-214 K-40 Pb-212 Pb-214 Tl-208	25% 25% 91% 49% 23% 23%
FY2014	3,035	—	—	Ac-228 Bi-214 K-40 Pb-212 Pb-214 Tl-208	24% 24% 91% 48% 24% 24%