Tentative Translation

Comprehensive Radiation Monitoring Plan

Adopted on August 2, 2011.
Revised on March 15, 2012.
Revised on April 1, 2012.
Revised on April 1, 2013.
Revised on April 1, 2014.
Revised on April 1, 2015.
Revised on April 1, 2016.
Revised on April 28, 2017.
Revised on February 1, 2019.
Revised on April 1, 2020.
Revised on April 1, 2021.
Revised on March 30, 2022.
Revised on March 16, 2023.

Monitoring Coordination Meeting, Japan

A large amount of radioactive materials were emitted into the environment due to an accident at the Tokyo Electric Power Company Inc.'s (now the Tokyo Electric Power Company Holdings, Inc. (TEPCO)) Fukushima Daiichi Nuclear Power Station (hereafter referred to as "TEPCO's Fukushima Daiichi NPS"), an event that was caused by an earthquake and a tsunami that struck the Pacific coast in the Tohoku region on March 11, 2011.

To conduct meticulous off- site environmental radiation monitoring pertaining to the accident at TEPCO's Fukushima Daiichi NPS (hereinafter referred to as "monitoring") reliably and systematically, the government set up the Monitoring Coordination Meeting, Japan (Note), under the auspices of the Nuclear Emergency Response Headquarters and formulated this plan. Accordingly, the relevant government ministries, local governments, the operator of nuclear facilities, and other entities joined forces to implement monitoring activities.

Over the course of twelve years since the earthquake, large fluctuations in measurement results obtained through monitoring according to this plan have been rarely observed. However, high air dose rates and concentrations of radioactive materials have been observed in some areas around TEPCO's Fukushima Daiichi NPS.

In addition, the government published "Basic Policy on handling of ALPS treated water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station" (hereinafter referred to as the "Basic Policy") in April 2021. The Basic Policy includes strengthening and enhancing sea area monitoring.

Based on these situations, monitoring according to this plan will continue to be conducted and the measurement results will be publicly disclosed.

Note: Chairperson: Minister of the Environment

Vice-Chairperson: Parliamentary Vice-Minister of the Environment

Secretary-General: Director-General for Radiation Protection Strategy and Security, the Secretariat of the Nuclear Regulation Authority and Director-General, Environmental Management Bureau, Ministry of the Environment

Members: Director-General for Nuclear Disaster Management, Cabinet office; Deputy Director-General, Support Team for Residents Affected by Nuclear Incidents, Nuclear Emergency Response Headquarters, Cabinet Office; Deputy Director-General, Nuclear Accident Disaster Response Team, Nuclear Emergency Response Headquarters, Cabinet Office; Director-General, Security Bureau, National Police Agency; Director-General, Elementary and Secondary Education Bureau, Ministry of Education, Culture, Sports, Science and Technology; Councilor, Minister's Secretariat, Ministry of Health, Labor and Welfare (crisis management and medical technology); Director-General, Agriculture, Forestry, and Fisheries Research Council, Ministry of Agriculture, Forestry and Fisheries; Deputy Director-General, Fisheries Agency; Director-General for Nuclear Accident Disaster Response, Agency for Natural Resources and Energy; Deputy Vice Minister for Security and Transport Safety Policy, Ministry of Land, Infrastructure, Transport and Tourism; Deputy Director-General for Disaster Mitigation, Meteorological Agency; Vice commandant, Japan Coast Guard; Administrative Vice Chief of Staff, Joint Staff, Ministry of Defense; Fukushima Prefectural Government; Tokyo Electric Power Company Holdings, Inc.(TEPCO); and other persons deemed necessary by the Chairperson

1. Purpose

The purpose of this plan is to contribute to the following:

i) To grasp radiation dose levels and distribution of radioactive materials mainly in the residential areas and locations on a medium-to-long-term basis;

ii) To plan and evaluate decontamination scheme and other measures to be taken to reduce exposure dose levels in accordance with different exposure situations;

iii) To investigate and make a decision with respect to changes and revisions made to evacuation zones based on predictions of future exposure as realistically as possible;

iv) To amass basic data for managing the health of residents and making health impact assessments; (including (external and internal) exposure doses of residents in the vicinity)

v) To grasp the state of the dispersion, deposition, migration, and transference of radioactive materials emitted into the environment.

vi) To reduce rumor-based adverse impacts on reputation by handling ALPS Treated Water (refers to ALPS treated water as defined in the Basic Policy)

Relevant government ministries, local governments, the operator of nuclear facilities, and other entities shall endeavor to collect data required for the foregoing.

Attention should also be paid to the development of a system for gathering and amassing data obtained through monitoring as basic data for healthcare management of local residents over a long time period.

2. Division of roles

○Basic policy

Nuclear Regulation Authority (NRA):

- Shall plan and implement the monitoring of natural environments, analyze and evaluate (Note) measurement results, and consolidate and disseminate these results;
- Shall coordinate the division of monitoring roles and provide scientific and technical advice to the relevant ministries and other entities;
- Shall consolidate and disseminate the results of the analysis and evaluation (Note) of measurement results as conducted by relevant ministries and other entities;

The Secretariat of the NRA shall conduct paperwork.

Nuclear Emergency Response Headquarters:

- Shall plan, implement, and coordinate plans for the monitoring of the area surrounding TEPCO's Fukushima Daiichi NPS in collaboration with the relevant government ministries, as well as analyze and evaluate (Note) measurement results.
- Provide support for monitoring conducted by the Fukushima Prefectural Government.

Relevant government ministries:

- Shall plan and implement monitoring in line with administrative objectives, analyze and evaluate (Note) measurement results, and consolidate and disseminate their results.
- Shall support other relevant organizations and bodies.

Local governments:

- Shall collaborate with the central government and the operator of nuclear facilities to conduct community-based monitoring, and consolidate and disseminate the results of the analysis and evaluation (Note) of measurement results.

The Operator of a nuclear facilities and other entities:

- Shall collaborate with the central government and local governments to conduct its responsible monitoring, and consolidate and disseminate the results of the analysis and evaluation (Note) of measurement results.

Note: "Analysis and evaluation" in this context means to verify the reliability of monitoring data and analyze the causes of any abnormal value detected.

○Specific monitoring actions

・ The relevant government ministries, local governments, the operator of nuclear facilities, and other entities shall implement monitoring as follows:

Monitoring targets	Consolidating and disseminating information (Planning and consolidating and disseminating the results of the analysis and evaluating measurements results)	Conducting monitoring actions and analyzing and evaluating measurement results, or supporting these actions *○ = implementing entity
Terrestrial environments (including soil, water, and atmosphere), aquatic environments (rivers, lakes and marshes, water sources, and groundwater), sea areas, and others	○Nuclear Regulation Authority (Ministry of the Environment will consolidate information concerning aquatic environments)	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operators of nuclear facilities) Others ○Nuclear Regulation Authority ○Ministry of the Environment ○Ministry of Economy, Trade and Industry ○Ministry of Land, Infrastructure, Transport and Tourism ○Local governments ○The operators of a nuclear facilities Ministry of Agriculture, Forestry and Fisheries (Note 1) Ministry of Health, Labor and Welfare Ministry of Defense (Note 2) <air and sea areas> Reconstruction Agency (Note 3)
Schools and other institutions	○Nuclear Regulation Authority (consolidation in conjunction with the provision of information by the Ministry of Education, Culture, Sports, Science and Technology)	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities) Others ○Nuclear Regulation Authority ○Local governments Nuclear Emergency Response Headquarters Ministry of Education, Culture, Sports, Science and Technology Ministry of Health, Labor and Welfare
Ports, parks, sewage systems, and other facilities	○Nuclear Regulation Authority (consolidation in conjunction with the provision of information by the Ministry of Land, Infrastructure, Transport and Tourism)	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities)

		Others ○Local governments and others Ministry of Land, Infrastructure, Transport and Tourism
Wild fauna and flora, waste, removed soil, and others	○Ministry of the Environment	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities)
		Others ○Ministry of the Environment ○Local governments The operators of nuclear facilities and others
Agricultural soil, forests and fields, pastures, and others	○Ministry of Agriculture, Forestry and Fisheries	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities)
		Others ○Ministry of Agriculture, Forestry and Fisheries ○Local governments
Supplied water	○Ministry of Health, Labor and Welfare	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities)
		Others ○Local governments ○Water utilities and others
Foodstuff (agricultural, forestry, livestock, fishery products, and others)	○Ministry of Health, Labor and Welfare	Area around TEPCO's Fukushima Daiichi NPS ○Nuclear Emergency Response Headquarters (With the participation of relevant ministries, local governments, and the operator of nuclear facilities)
		Others ○Ministry of Agriculture, Forestry and Fisheries ○Local governments National Tax Agency (Note 4) and others

Note 1 The Ministry of Agriculture, Forestry and Fisheries (Fisheries Agency) monitors marine products with a focus on radioactive cesium to ensure food safety and consumer confidence based on the

"Concepts of Inspection Planning and the Establishment and Cancellation of Items and Areas to which Restriction of Distribution and/or Consumption of Foods concerned Applies". In addition, monitoring of tritium is conducted in accordance with the Basic Policy and others, taking into consideration the requests of local stakeholders. The results of marine products monitoring also contribute to the data for sea area monitoring. Hence, marine products monitoring is included in this plan.

Note 2 The Ministry of Defense, shall, upon request, provide support through the use of aircrafts and vessels in collaboration with relevant ministries and agencies as required.

Note 3 The Reconstruction Agency shall collaborate with relevant ministries and agencies in the restoration of infrastructure in zones subject to evacuation orders and in the overall coordination efforts, supporting the return of residents.

Note 4 The National Tax Agency shall cooperate with relevant government ministries in monitoring food products relating to alcoholic beverages, provided it is tasked with ensuring the safety of alcoholic beverages.

3. Implementation plan

1) Monitoring plans for environments (including soil, water, and atmosphere), aquatic environments, sea areas, and others

○Terrestrial environment monitoring primarily around TEPCO's Fukushima Daiichi NPS

[Wide area monitoring of the whole of Fukushima Prefecture and neighboring prefectures]

<Air dose , integral dose, and others>

- Measurement results obtained from fixed and transportable monitoring posts installed throughout Fukushima Prefecture and in the neighboring prefectures (Miyagi, Yamagata, Ibaraki, Tochigi, Gunma, and Niigata) as well as from real-time dose measurement systems set up at kindergartens, primary schools, junior high schools, high schools, daycare centers, parks, and other public facilities where residents gather in Fukushima Prefecture shall be publicly released via the Internet. [Regularly conducted] (Nuclear Regulation Authority, Fukushima Prefectural Government, and the governments of neighboring prefectures)
- Fixed-point measurements of the air dose rate using survey meters and other instruments and fixed-point measurements of integral dose using integrating dosimeters will be taken across the whole of Fukushima Prefecture. [Regularly conducted] (Nuclear Regulation Authority, Nuclear Emergency Response Headquarters, Fukushima Prefectural Government)
- To grasp changes in the air dose rate within an 80-kilometer radius of TEPCO's Fukushima Daiichi NPS, airborne monitoring will be regularly conducted in this area and air dose rate maps will be accordingly produced. [Regularly conducted] (Nuclear Regulation Authority)
- To measure air dose rates on the ground across an entire area, continuous car-borne surveys based on the use of motor vehicles will be conducted and air dose rate maps will be accordingly produced. [Regularly conducted] (Nuclear Regulation Authority, Fukushima Prefectural Government, and others)
- The air dose rate will be measured using survey meters at public facilities in Fukushima Prefecture. [Conducted as needed] (Fukushima Prefectural Government)

＜Airborne dust＞

- Dust particles suspended in the air (airborne dust) will be monitored with a focus on measuring the living environment. [Regularly conducted] (Nuclear Regulation Authority, Nuclear Emergency Response Headquarters, Fukushima Prefectural Government)

＜Monthly fallout and others＞

- Monthly fallout will be measured once a month and the supplied water will be measured once a year, and upon measurement, results will be publicly disclosed. [Regularly conducted] (Nuclear Regulation Authority, Fukushima Prefectural Government)

＜Terrestrial soil＞

- The concentration of radioactive material in soil will be measured and the state of the deposition of radioactive material on the ground's surface will be measured, whereupon soil concentration, maps will be accordingly produced. [Regularly conducted] (Nuclear Regulation Authority, Nuclear Emergency Response Headquarters, Fukushima Prefectural Government)

＜Indicator plants＞

- Indicator plants that can be sampled year-round regardless of the season (such as pine needles) will be specified and the concentrations of radioactive materials in these plants will be continuously measured. [Regularly conducted] (Nuclear Regulation Authority, Nuclear Emergency Response Headquarters, Fukushima Prefectural Government)

[Detailed monitoring in zones subject to evacuation orders]

- The following types of monitoring will be sequentially conducted in zones subject to evacuation orders. Where necessary, additional monitoring will be sequentially conducted. [(i) = periodically conducted; (ii) = conducted as needed] (Nuclear Emergency Response Headquarters, Reconstruction Agency, relevant government ministries, the operator of a nuclear facilities)

i) Detailed area-wide monitoring of the air dose rate by a car-borne survey

ii) Detailed monitoring to support work to restore wide-area infrastructure

- To support the return of residents, resumption of habitation, and reconstruction, the following types of monitoring will be sequentially conducted in accordance with local needs. Precision dose maps for the return of residents will be produced. For a system to enable the conducting of monitoring, the Nuclear Emergency Response Headquarters and Nuclear Regulation Authority will play a central role in constructing a system of collaboration among the relevant government ministries, the Fukushima Prefectural Government, and the operator of a nuclear facilities in accordance with the nature of local needs. [Conducted as needed] (Nuclear Emergency Response Headquarters, Nuclear Regulation Authority, Reconstruction Agency, relevant government ministries, Fukushima Prefectural Government, the operator of nuclear facilities, and others)

i) Monitoring of the air dose rate at kindergartens, schools, hospitals, and other key facilities situated in applicable zones

ii) Area-wide monitoring of the air dose rate based on the use of car-borne surveys and drones in zones where residents reside

iii) Monitoring as requested by local governments

iv) Measuring air dose rates based on the state of progress in terms of decontamination

○Monitoring of aquatic environments (rivers, lakes and marshes, water sources, and groundwater)

- Concentrations of radioactive materials in water, bottom sediment, and environmental samples (soil and aquatic organisms (conducted primarily within Fukushima Prefecture for aquatic organisms)) collected at environmental reference points in rivers, lakes and marshes, water sources, and coastal areas in Fukushima Prefecture and neighboring prefectures will be measured together with air dose rates at the reference points. In particular, concentrations of radioactive materials in water and bottom sediment obtained from rivers, lakes and marshes, water sources, and coastal areas in Fukushima Prefecture, as well as air dose rates and concentrations of radioactive materials contained in water at ocean-side and lake-side swimming beaches shall be more intensively measured. [Regularly conducted; however, the monitoring of ocean-side and lake-side swimming beaches in Fukushima Prefecture will be conducted before and after the beaches are opened] (Ministry of the Environment, Fukushima Prefectural Government)
- Concentrations of radioactive materials in groundwater in Fukushima Prefecture and neighboring prefectures will be monitored. In particular, concentrations of radioactive materials in groundwater in Fukushima Prefecture will be more intensively measured. In addition, concentrations of

radioactive materials contained in potable well water in Fukushima Prefecture will especially be measured. [Regularly conducted] (Ministry of the Environment, Fukushima Prefectural Government)

○Sea area monitoring

- Monitoring will be conducted in accordance with the separately attached "Proceeding with Sea Area Monitoring". (Nuclear Regulation Authority, Fisheries Agency, Ministry of Land, Infrastructure, Transport and Tourism, Ministry of the Environment, Fukushima Prefectural Government, the operator of nuclear facilities)

○Nationwide monitoring

＜Air dose rates＞

- Measurement results obtained at all monitoring posts installed in each prefecture for the environmental radioactivity level survey shall be publicly released in real time via the Internet. Estimates of air dose rates at a height of one meter above the ground in the proximity of monitoring posts installed by no later than March 11, 2011, shall be calculated based on past and publicly-disclosed results in real time. (In addition, air dose rates at a height of one meter above the ground are measured by a survey meter, and shall be measured and publicly disclosed once a month after validation.) [Regularly conducted] (Nuclear Regulation Authority, local governments)

- Airborne monitoring will be conducted to grasp changes in the air dose rate in areas with relatively high air dose rates in Fukushima Prefecture and neighboring prefectures (snow accumulation conditions will be taken into account when conducting monitoring). [Regularly conducted] (Nuclear Regulation Authority)

＜Monthly fallout and others＞

- Monthly fallout will be measured once a month and the supplied water will be measured once a year, whereupon measurement, the results will be publicly disclosed. [Regularly conducted] (Nuclear Regulation Authority, local governments)

○Other types of monitoring

<Monitoring to address newly emerged issues>

- Where a high level of need to conduct monitoring on an ongoing or emergency basis from the standpoint of reducing exposure for residents to radiation has been newly emerged, the necessary actions will be pursued in collaboration with administrative organs with jurisdiction over relevant industries, schools, and other concerned entities. [Conducted where necessary] (administrative organs with jurisdiction over the affairs in question)

2) Monitoring plans for schools and other locations (such as schools and daycare centers)

<Measuring air dose rates in schoolyards and other locations>

- Measurement results generated by real-time dose measurement systems set up at kindergartens, primary schools, junior high schools, high schools, daycare centers, parks, and other public facilities where residents gather in Fukushima Prefecture shall be publicly released via the Internet.

(Re-issued) [Regularly conducted] Nuclear Regulation Authority]

- Air dose rates in schoolyards and other sites will be measured once a year at kindergartens, primary schools, junior high schools, high schools, daycare centers, and other locations in Fukushima Prefecture. [Regularly conducted] (Fukushima Prefectural Government)
- Air dose rates at child welfare facilities in Fukushima Prefecture will be measured. [Regularly conducted] (Fukushima Prefectural Government)

<Measuring concentrations of radioactive materials in outdoor pool water>

- Concentrations of radioactive materials in outdoor pool water will be surveyed at schools in Fukushima Prefecture that would like to have this survey conducted. [Conducted as needed] (Fukushima Prefectural Government)

<Measuring concentrations of radioactive materials in school-provided lunches>

- Food ingredients used to prepare school-provided lunches will be inspected. [Conducted as needed] (Ministry of Education, Culture, Sports, Science and Technology (summarization of results), local governments)
- Lunch foods provided by schools and child welfare facilities shall be subject to inspections for measuring radioactive materials. [Conducted as needed] (Local governments)

3) Monitoring plans for ports, parks, sewage systems, and other facilities

<Measuring sewage sludge>

- Concentrations of radioactive materials contained in sewage sludge treated by concerned local governments will be measured and grasped. [Conducted as needed] (Ministry of Land, Infrastructure, Transport and Tourism (summarization of results), local governments)

<Monitoring air and seawater at ports>

- Air dose rates in the air and concentrations of radioactive materials in the seawater at ports will be measured in the Tohoku and Kanto regions. [Conducted as needed] (Ministry of Land, Infrastructure, Transport and Tourism (summarization of results), local governments, and others)

<Measuring at city parks and others>

- Air dose rates at city parks and others in Fukushima Prefecture will be measured. [Conducted as needed] (Fukushima Prefectural Government)

<Measuring at tourist sites>

- Air dose rates at tourist sites (tourist facilities, mountainous areas, nature sites, and roadside stations) in Fukushima Prefecture shall be measured. [Conducted as needed] (Fukushima Prefectural Government)

4) Monitoring plans for wild fauna and flora, waste, removed soil, and other items

○Monitoring of wild fauna and flora

- Wild fauna and flora constituting indicators will be sampled and analyzed to help ascertain the

impact of radiation on natural ecosystems. [Conducted as needed] (Ministry of the Environment)

- Concentrations of radioactive materials in major game animals and birds that are often served as food will be measured in Fukushima Prefecture and neighboring prefectures. [Conducted as needed] (Fukushima Prefecture Government and the prefectural governments of neighboring prefectures)

○Monitoring of waste, removed soil, and other items

- In accordance with the Act on Special Measures concerning the Handling of Pollution by Radioactive Materials, waste at water supply facilities will be surveyed, concentrations of radioactive materials in exhaust gas; wastewater discharged by waste incineration facilities; and groundwater and effluents at their final disposal sites will be measured, and air dose rates at the site boundaries of waste incineration facilities and final disposal sites, the Interim Storage Facility will be measured. [Regularly conducted] (Ministry of the Environment, local governments, relevant business operators, and others)

5)Monitoring plans for agricultural soil, forests and fields, pastures, and others

<Monitoring of agricultural soil>

- Changes in concentrations of radioactive materials in agricultural soil will be grasped and characteristics of their transference will be clarified. [Conducted as needed] (Ministry of Agriculture, Forestry and Fisheries)

<Monitoring of forests and fields, pastures, and others>

- With respect to forests and fields, concentrations of radioactive materials and air dose rate in forest soil, branches, leaves, bark, and timber will be measured in Fukushima Prefecture. [Regularly conducted] (Forestry Agency, Fukushima Prefectural Government)
- Concentrations of radioactive materials in pastures located in the relevant prefectures will be measured. [Conducted as needed] (Ministry of Agriculture, Forestry and Fisheries (summarization of results) and local governments)
- Concentrations of radioactive materials in reservoirs and others will be measured in Fukushima Prefecture. [Conducted as needed] (Ministry of Agriculture, Forestry and Fisheries)

6) Monitoring plan for the water supply

- In connection with purified water from water treatment plants and raw water from water intake areas, water-sampling sites will be set up and water collected from these sites will be inspected in each of the prefectures concerned. Especially in Fukushima Prefecture, concentrations of radioactive materials in tap water will be measured at each water source point. [Conducted as needed for the time being] (Ministry of Health, Labour and Welfare (formulation of inspection policies, summarization of results), Nuclear Emergency Response Headquarters, and local governments)

7) Monitoring plan for foodstuff (agricultural, forestry, livestock, fishery products, and others)[1]

<Monitoring of foodstuff in each prefecture>

- When necessary, guidelines applicable to inspection plans shall be revised based on inspection results and other considerations. (Nuclear Emergency Response Headquarters (with the collaboration of relevant ministries and agencies))
- Foodstuff will be monitored by prescribing items and regions subject to inspections in accordance with guidelines applicable to inspection plans as planned. (Ministry of Health, Labour and Welfare (summarization of results), concerned local governments)

<Survey of concentrations of radioactive materials in foodstuff>

- To help grasp actual exposure dose levels attributed to the intake of food, the Fukushima Prefectural Government will conduct a detailed survey of concentrations of radioactive materials in foodstuff over the course of several years with the cooperation of concerned organizations. [Conducted as needed] (Fukushima Prefectural Government (with the cooperation of concerned organizations))
- The central government will continuously conduct surveys of concentrations of radioactive materials in foodstuff in different areas, including Fukushima Prefecture, as a way to contribute to surveys conducted to estimate actual exposure dose levels attributed to the intake of foodstuff. [Conducted as needed] (Ministry of Health, Labour and Welfare)

4. Points to keep in mind

(a) Concerned organizations will continuously organize and consolidate the results of monitoring and release these results via websites and update them as needed to contribute to the use of these results. In particular, the Nuclear Regulation Authority will operate a website that summarizes monitoring data, including links to websites operated by the concerned organizations, and build and publicly disclose a reliable database by consolidating and accumulating monitoring results and various types of incidental information required for the utilization of these results (including detailed measurement conditions, minimum detectable activity for individual analyses, and meteorological conditions).

(b) Concerned organizations will, when necessary, look into revising the minimum detectable activity, frequency, and measurement scope in accordance with the purposes of monitoring, local needs, and other considerations.

(c) Concerned organizations will endeavor to standardize measurements in accordance with the applicable purpose using standardizing measurement, such as sampling methods and calibrating measurement instruments. In addition, if necessary, the analytical capabilities of the laboratories should be verified in cooperation with the International Atomic Energy Agency (IAEA).

(d) Concerned organizations will endeavor to utilize the knowledge of experts when they formulate and implement monitoring implementation plans, engage in analytical and verification work, and disseminate information on the results of monitoring. At that time, the knowledge of experts across multiple disciplines will be used, where needed, in accordance with the purposes and targets of each monitoring action to help conduct more appropriate monitoring and utilize and disseminate the

[1] Be aware that the points taken into account while inspecting foodstuff in accordance with the law and those while conducting environmental monitoring differ.

results of such monitoring.

(e) This plan does not change the implementation system or contents of monitoring that is conducted by relevant government ministries and local governments in accordance with their administrative objectives. Due regard shall be paid to ensure that the conducted monitoring. to date with relevant government ministries, local governments, the operator of nuclear facilities, and other entities acting in concert with one another in accordance with their administrative objectives, will be conducted smoothly and promptly.

Appendix

Proceeding with Sea Area Monitoring

1 Implementation details

The relationship between the details of implementation with respect to seawater, sea sediment, and marine biota and Comprehensive Radiation Monitoring Plan is as set forth below:

Table 1: Implementation details for the monitoring of sea areas

Samples	Implementation details for the monitoring of sea areas*1	Applicable purposes in the Comprehensive Radiation Monitoring Plan
Seawater	To ascertain concentrations of radioactive cesium in particular and other radioactive materials	(v), (vi)
Sea sediment*2	To ascertain the distribution of radioactive cesium in particular and time–dependence and/or migration of radioactive materials	(v)
Marine biota	To ascertain concentrations of radioactive materials and changes in concentrations of radioactive materials over time	(ii), (iv), (v), (vi)

*1… Cs-134 and Cs-137 will be analyzed, and other radionuclides as required.

*2… The qualitative properties of soil will be ascertained as required.

2 Implementation system

Nuclear Regulation Authority, Fisheries Agency, Ministry of Land, Infrastructure, Transport and Tourism, Ministry of the Environment, Fukushima Prefectural Government, Tokyo Electric Power Company Holdings, Inc. (TEPCO) (hereinafter referred to as "TEPCO"), research institutes, relevant local governments, fishery cooperatives, and other entities will conduct monitoring actions in collaboration with one another.

3 Sea areas where monitoring will be conducted

Monitoring will be conducted in the following sea areas around the Tokyo Electric Power Company Holdings, Inc. (TEPCO) Fukushima Daiichi Nuclear Power Station (NPS) (hereinafter referred to as "TEPCO's Fukushima Daiichi NPS") and in Tokyo Bay.

(1) Nearshore sea area: Sea area that needs to be monitored near the TEPCO's Fukushima Daiichi NPS

* Sea area in an approximately 3 km radius from the point midway between the No. 2 and No. 3 exhaust stacks

(2) Coastal sea area: Sea area within approximately 30 km from the coastline extending from Iwate prefectures to Miyagi Prefecture and the coastline of Fukushima

and Ibaraki prefectures (including estuaries and excluding the nearshore sea area)

(3) Offshore sea area: Sea area within approximately 30 to 90 km from the coastline

(4) Open sea: Sea area beyond approximately 90 km from the coastline

(5) Tokyo Bay: Tokyo Bay is a closed sea area where the inflow and accumulation of radioactive materials from rivers is of particular concern.

4 Implementation plan

4-1 Seawater

Where there are leaks from TEPCO's Fukushima Daiichi NPS, TEPCO and relevant government ministries will collaborate and conduct appropriate monitoring in accordance with circumstances where needed.

(1) Nearshore sea area

Monitoring will be conducted in accordance with Table 2.

In addition, TEPCO will install equipment to continuously measure seawater and review the implementation plan.

Table 2: Monitoring of seawater in the nearshore sea area

Sampling points	Radionuclide	Detection limit (Bq/L)	Frequency of sampling	Sampling depth[*1]	Implementing entity
T-1, T-2[*2] (See Fig. 3)	Cs-134	1	Once per day	Surface layer	TEPCO
	Cs-137	1×10^{-3}	Once per week		
	H-3	4×10^{-1}	Once per week		
	Sr-90	1×10^{-3}	Once per month		
	Pu-238[*3] Pu-239+240[*4]	1×10^{-5}	Once every six months		
T-0-1, T-0-2 T-0-3, T-0-1A T-0-3A[*2] (See Fig. 3)	Cs-134 Cs-137	1	Once per week	Surface layer	TEPCO
	H-3	4×10^{-1}	Once per week	Surface layer	
T-A1, T-A2 T-A3[*2] (See Fig. 3)	Cs-134 Cs-137	1	Once per week	Surface layer	TEPCO
	H-3	4×10^{-1}	Once per week	Surface layer	
E-S1, E-S4, E-S5, E-S13, E-S14, E-S16[*6] (See Fig. 3)	H-3	1×10^{-1}	Once every three months	Surface layer and bottom layer	Ministry of the Environment

E-S3, E-S10, E-S15[*6,7] (See Fig. 3)	H-3	1×10^{-1}	Once every three months[*8]	Surface layer and bottom layer	Ministry of the Environment
	Cs-134 Cs-137 Sr-90	1×10^{-3}	Once every three months	Surface layer and bottom layer	Ministry of the Environment
	Ru-106 Sb-125 Co-60 I-129	1×10^{-2} ~1.2			
M-101, M-102, M-103, M-104 (See Fig. 3)	Cs-134 Cs-137	1×10^{-3}	Once per month	Surface layer	Nuclear Regulation Authority
	H-3	1×10^{-1}	Once per month	Surface layer	
	Sr-90	1×10^{-3}			
F-P01, F-P02, F-P03, F-P04[*9] (See Fig. 3)	Cs-134 Cs-137	2×10^{-3}	Once per month	Surface layer	Fukushima Prefectural Government
	H-3	5×10^{-1}			
		1×10^{-1}	Once every three months		
	Sr-90	5×10^{-4}	Once per month		
	Pu-238 Pu-239+240	1×10^{-5}			
F-P07, F-P08, F-P09[*9] (See Fig. 3)	Cs-134 Cs-137	2×10^{-3}	Once every three months	Surface layer	Fukushima Prefectural Government
	H-3	5×10^{-1}			
		1×10^{-1}			
	Sr-90	5×10^{-4}			
	Pu-238 Pu-239+240	1×10^{-5}			
T-1, T-2 (See Fig. 3)	Cs-134 Cs-137	5×10^{-2}	Once every three months	Surface layer	Fukushima Prefectural Government
	H-3	5×10^{-1}			

*1… Surface layer: From sea level to depth of about 2 m
Bottom layer: From ocean floor to 5 m above

*2… At some sampling points in the nearshore sea area, the analysis to be conducted to quickly assess the situation for H-3 will be also conducted after the start of ALPS

treated water discharge.

*3… Where Pu-238 is detected, U-234, U-235, U-238, Am-241, Cm-242, and Cm-243+244[*4] will also be analyzed.

*4… Pu-239+240 means $^{239+240}$Pu; same for notations appearing hereinafter.

*5… Cm-243+244 means $^{243+244}$Cm; same for notations appearing hereinafter.

*6… At some of these sampling points, for the time being after the start of ALPS treated water discharge, the analysis for preliminary reports for H-3 and/or γ-ray monitoring will be conducted as necessary.

*7… Other related radionuclides (basically the nuclides removed by ALPS and C-14) will be analyzed once per year.

*8… For the time being after the start of ALPS treated water discharge, sampling will be conducted once per month.

*9… Other γ-ray emitting nuclides (Mn-54, Co-58, Fe-59, Co-60, Zr-95, Nb-95, Ru-106, Ce-144) will also be monitored.

*… Total β will be measured as needed in order to survey indications of concentrations of radioactive materials in seawater.

(2) Coastal sea area

Monitoring will be conducted in accordance with Table 3.

Table 3: Monitoring of seawater in the coastal sea area

Areas and sampling points		Radionuclide	Detection limit (Bq/L)	Frequency of analysis	Sampling depth[*1]	Implementing entity
Iwate Prefecture	E-31, E-32 (See Fig. 1)	Cs-134 Cs-137	1	Once every six months	Surface layer and bottom layer	Ministry of the Environment
Miyagi Prefecture	T-MG0, T-MG1, T-MG2, T-MG3, T-MG4, T-MG5, T-MG6 (See Fig. 1)	Cs-134 Cs-137	1×10^{-3}	Once per month	Surface layer and bottom layer	TEPCO
	E-41, E-42, E-43, E-44, E-45, E-46, E-47, E-48, E-49, E-4A, E-4B, E-4C (See Fig. 1)	Cs-134 Cs-137	1	Once every one to six months	Surface layer and bottom layer	Ministry of the Environment
	E-S17[*9] (See Fig. 1)	H-3	1×10^{-1}	Once every three months	Surface layer	Ministry of the Environment
Fukushima Prefecture	T-3, T-6[*10] (See Fig. 4)	Cs-134 Cs-137	1×10^{-3}	Once per week	Surface layer	TEPCO

		H-3	1×10^{-1}*2	Once per week*3	Surface layer	
	T-5, T-D1, T-D5, T-D9*10 (See Fig. 4)	Cs-134 Cs-137	1×10^{-3}	Once per week	Surface layer and bottom layer	TEPCO
		H-3	1×10^{-1}*2	Once per week*3	Surface layer	
		Sr-90	1×10^{-3}	Once per month		
		Pu-238 Pu-239+240	1×10^{-5}	Once every six months		
	T-4*4, T-11, T-14 (See Fig. 4)	Cs-134 Cs-137	1×10^{-3}	Once per week	Surface layer and bottom layer	TEPCO
	T-S1, T-S2*5, T-S3, T-S4, T-S5, T-S7, T-S8, T-B1, T-B2, T-B3, T-B4, T-13-1, T-7, T-18, T-12, T-17-1, T-20, T-22, T-MA, T-M10*10 (See Figs. 2 and 4)	Cs-134 Cs-137	1×10^{-3}	Once per month	Surface layer and bottom layer	TEPCO
		H-3	1×10^{-1}*2	Once per month	Surface layer	
	E-71, E-72, E-73, E-74, E-75, E-76, E-77, E-78, E-79, E-7A, E-7B, E-7F, E-7G, E-7H, E-7I (See Figs. 2 and 4)	Cs-134 Cs-137	1	Once every one to two months	Surface layer and bottom layer	Ministry of the Environment
	E-S18, E-S31, E-S33, E-S36*9 (See Figs. 2 and 4)	H-3	1×10^{-1}	Once every three months	Surface layer	Ministry of the Environment
	E-S19, E-S20, E-S21, E-S22, E-S23, E-S24, E-S25, E-S26, E-S27, E-S28, E-S29, E-S30, E-S34, E-S35*9	H-3	1×10^{-1}	Once every three months	Surface layer and bottom layer	Ministry of the Environment

	(See Figs. 2 and 4)					
	6 locations on the Fukushima coast (beaches) *7	H-3	1×10^{-1}	Twice per year	Surface layer	Ministry of the Environment
	F-P05, F-P06*11 (See Fig. 4)	Cs-134 Cs-137	2×10^{-3}	Once per month	Surface layer	Fukushima Prefectural Government
		H-3	5×10^{-1}			
			1×10^{-1}	Once every three months		
		Sr-90	5×10^{-4}	Once per month		
		Pu-238 Pu-239+240	1×10^{-5}			
	F-P10, F-P11*11 (See Fig. 4)	Cs-134 Cs-137	2×10^{-3}	Once every three months	Surface layer	
		H-3	5×10^{-1}			
		Sr-90	5×10^{-4}			
		Pu-238 Pu-239+240	1×10^{-5}	Once per year		
	F-P12*11 (See Fig. 2)	Cs-134 Cs-137	2×10^{-3}	Once per year	Surface layer	
		H-3	5×10^{-1}			
		Sr-90	5×10^{-4}			
		Pu-238 Pu-239+240	1×10^{-5}			
	Fukushima coast (important ports and fishery harbors) F-P13, F-P14, F-P15, F-P16, F-P17, F-P18, F-P19, F-P20, F-P21, F-P22, F-P23, F-P24, F-P25, F-P26, F-P27, F-P28 (See Figs. 2, 4 and 5)	Cs-134 Cs-137	1	Once per month	From sea level to depth of about 7m	
	Fukushima coast (shallow-water fishing grounds) F-P29, F-P30, F-P31, F-P32,	Cs-134 Cs-137	1	Once per month	Surface layer	
		H-3*6	5×10^{-1}			

	F-P33, F-P34, F-P35 (See Fig. 2)					
	Fukushima coast (beaches) F-P36, F-P37, F-P38, F-P39, F-P40, F-P41, F-P42, F-P43, F-P44, F-P45, F-P46, F-P47, F-P48	Cs-134 Cs-137	1	Twice per year	Surface layer	
		H-3[*7]	5×10^{-1}			
	E-71, E-72, E-73, E-74, E-75, E-76, E-77, E-78, E-79, E-7A, E-7B, E-7F, E-7G, E-7H, E-7I (See Figs. 2 and 4)	H-3	5×10^{-1}	Twice per year	Surface layer	
Ibaraki Prefecture	T-A, T-B, T-C, T-D, T-E, T-Z (See Figs. 5 and 6)	Cs-134 Cs-137	1[*8]	Once per month	Surface layer and bottom layer	TEPCO
	E-81, E-82, E-83, E-84, E-85 (See Figs. 5 and 6)	Cs-134 Cs-137	1	Once every three to four months	Surface layer and bottom layer	Ministry of the Environment
	E-S32[*9] (See Fig. 5)	H-3	1×10^{-1}	Once every three months	Surface layer	Ministry of the Environment

*1… Surface layer: Sea level to depth of about 3 m; bottom layer: ocean floor to 5 m above

*2… For the time being, the detection limit will be 4×10^{-1} Bq/L depending on installation of the electrolytic enrichment devices.

*3… Analysis at 0.1 Bq/L of the detection limit will be performed once per month.

*4… Monitoring at T-4 will only be conducted at the surface layer due to the shallow water.

*5… Only H-3 will be monitored at T-S2. Cs-134, Cs-137 will be monitored at T-14 (Same location as T-S2).

*6… Except F-P30

*7… Only for the beaches to be opened.

*8… Planned to be changed to 1×10^{-3}Bq/L.

*9… At some of these sampling points, for the time being after the start of ALPS treated water discharge, the analysis for preliminary reports for H-3 will be conducted as necessary.

*10… At some sampling points in the coastal sea area, the analysis to be conducted to

quickly assess the situation for H-3 will be also conducted after the start of ALPS treated water discharge.

*11… Other γ-ray emitting nuclides (Mn-54, Co-58, Fe-59, Co-60, Zr-95, Nb-95, Ru-106, Ce-144) will also be monitored.

*… Total β will be measured as needed in order to survey indications of concentrations of radioactive materials in seawater.

(3) Offshore sea area

Monitoring will be conducted in accordance with Table 4.

Table 4: Monitoring of seawater in the offshore sea area

Sampling points	Radionuclide	Detection limit (Bq/L)	Frequency of analysis	Sampling depth	Implementing entity
M-C3, M-D3, M-E3, M-E5, M-F3, M-G3, M-G4, M-H3 (See Fig. 2)	Cs-134 Cs-137	1×10^{-3}	Once every three months	Surface layer (sea level to depth of about 2 m)・Middle layer[*1], bottom layer (ocean floor to 40 m above)	Nuclear Regulation Authority
	H-3	1×10^{-1}	Once every three months	Surface layer	Nuclear Regulation Authority
	Sr-90	1×10^{-3}	Once every three months	Surface layer	Nuclear Regulation Authority
M-B3, M-C1, M-D1, M-E1, M-I0, M-J1 (See Figs. 1, 2 and 5)	Cs-134 Cs-137	1×10^{-3}	Once every three months	Surface layer (sea level to depth of about 2 m)・Middle layer[*1], bottom layer (ocean floor to 40 m above)	Nuclear Regulation Authority
	Sr-90	1×10^{-3}	Once every three months	Surface layer	Nuclear Regulation Authority

M-A1, M-A3, M-MI4, M-B1, M-B5, M-F1, M-G0, M-G1, M-H1, M-I1, M-I3, M-IB2, M-J3, M-K1, M-IB4, M-L1, M-L3, M-M1 (See Figs. 1, 2, 5 and 6)	Cs-134 Cs-137	1×10^{-3}	Once every three months	Surface layer (sea level to depth of about 2 m)・ Middle layer*1, bottom layer (ocean floor to 40 m above)	Nuclear Regulation Authority
M-B1, M-H1, M-I1 (See Figs. 1, 2 and 5)	H-3	1×10^{-1}	Once every three months	Surface layer	Nuclear Regulation Authority
M-C1, M-D1, M-E1, M-F1, M-G1(See Fig. 2)	H-3	1×10^{-1}	Once every three months	Surface layer and bottom layer	Nuclear Regulation Authority

*1… At M-A1, M-A3, M-M14, M-B5, M-D3, M-E3, M-E5, M-F3, M-G3, M-G4, M-H3, M-I3, M-J3, M-L3, samples will be taken at a depth of 100m, and at M-B3, M-C3, M-D1, M-E3, M-G0, M-I1 at a depth of 50 m.

*… Total β will be measured as needed in order to survey indications of concentrations of radioactive materials in seawater.

(4) Open sea

Monitoring will be conducted in accordance with Table 5.

Table 5: Monitoring of seawater in the open sea

Sampling points	Radionuclide	Detection limit (Bq/L)	Frequency of analysis	Sampling depth	Implementing entity
M-10, M-11, M-14, M-15, M-19, M-20, M-21, M-25, M-26, M-27 (See Fig. 7)	Cs-134 Cs-137	1×10^{-3}	Once every six months	Surface layer (sea level to depth of about 2 m) and from sea level to depths of about 100, 200, 300, and 500 m	Nuclear Regulation Authority

(5) Tokyo Bay

Monitoring will be conducted in accordance with Table 6.

Table 6: Monitoring of seawater in Tokyo Bay

Sampling points		Radionuclide	Detection limit (Bq/L)	Frequency of analysis	Sampling depth[*1]	Implementing entity[*2]
Estuaries	E-T1, E-T2, E-T3, E-T4, E-T5, E-T6, E-T7, E-T8 (See Fig. 8)	Cs-134 Cs-137	1	Four to seven times per year	Surface layer and bottom layer	Ministry of the Environment
	E-T1, E-T2, E-T3, E-T4 (See Fig. 8)	Cs-134 Cs-137	1×10^{-3}	Once per year	Surface layer	Nuclear Regulation Authority
Middle of the bay	K-T1, K-T2 (See Fig. 8)	Cs-134 Cs-137	1×10^{-3}	Six times per year	Surface layer	Nuclear Regulation Authority
	M-C6, M-C9 (See Fig. 8)	Cs-134 Cs-137	1×10^{-3}	Once per year	Surface layer	Nuclear Regulation Authority
Near the center of the mouth of the bay	KK-U1 (See Fig. 8)	Cs-134 Cs-137	5	Once per month	Surface layer	Ministry of Land, Infrastructure, Transport and Tourism
		Cs-134 Cs-137	1×10^{-3}	Once per year	Surface layer	Nuclear Regulation Authority

*1… Surface layer: Sea level to depth of about 2 m; bottom layer: ocean floor to 2 m above.

*2… Monitoring is to be conducted as much as possible with the cooperation of relevant

local governments.

4-2 Sea sediment

(1) Nearshore sea area

Monitoring will be conducted in accordance with Table 7.

Table 7: Monitoring of sea sediment in the nearshore sea area

Sampling points	Radionuclide	Detection limit (Bq/kg dry soil)	Frequency of analysis	Implementing entity
T-1, T-2 (See Fig. 3)	Cs-134 Cs-137	1	Once per month	TEPCO
	Sr-90	2	Once every two months	
	Pu-238[*1] Pu-239+240	3×10^{-2}	Once every six months	
F-P01, F-P02, F-P03, F-P04[*2] (See Fig. 3)	Cs-134 Cs-137	1.5	Once every three months	Fukushima Prefectural Government
	Sr-90	2.5×10^{-1}		
	Pu-238 Pu-239+240	2×10^{-1}		

*1… Where Pu-238 is detected, U-234, U-235, U-238, Am-241, Cm-242, and Cm-243+244 will also be analyzed.

*2… Other γ-ray emitting nuclides (Cr-51, Mn-54, Co-58, Fe-59, Co-60, Zr-95, Nb-95, Ru-106, Sb-125, Ce-144) will also be monitored.

(2) Coastal sea area

Monitoring will be conducted in accordance with Table 8.

Table 8: Monitoring of sea sediment in the coastal sea area

Areas and sampling points		Radionuclide	Detection limit (Bq/kg dry soil)	Frequency of analysis	Implementing entity
Iwate Prefecture	E-37, E-38, E-39, E-3A (See Fig. 1)	Cs-134 Cs-137	1	Once per year	Ministry of the Environment
	E-31, E-32 (See Fig. 1)	Cs-134 Cs-137[*1]	1×10^{1}	Once every six months	Ministry of the Environment

Miyagi Prefecture	E-4F, E-4G, E-4H, E-4J, E-4K, E-4L, E-4M (See Fig. 1)	Cs-134 Cs-137	1	Once per year	Ministry of the Environment
	E-41, E-42, E-43, E-44, E-45, E-46, E-47, E-48, E-49, E-4A, E-4B, E-4C (See Fig. 1)	Cs-134 Cs-137[*1]	1×10^{1}	Once every one to six months	Ministry of the Environment
Fukushima Prefecture	T-3, T-4, T-5, T-11, T-14, T-B1, T-B2, T-B3, T-B4, T-D1, T-D5, T-D9, T-S1, T-S3, T-S4, T-S5, T-S7, T-S8, T-①, T-②, T-③, T-④, T-⑤, T-⑥, T-⑦, T-⑧, T-⑨, T-⑩, T-⑪, T-⑫, T-⑬ (See Figs. 2 and 4)	Cs-134 Cs-137	1	Once per month	TEPCO
	T-7, T-12, T-13-1, T-17-1, T-18, T-20, T-22, T-M10, T-MA (See Figs. 2 and 4)	Cs-134 Cs-137	1	Once every two months	TEPCO
	E-7C, E-7D, E-7E, E-7F, E-7G, E-7H (See Fig. 2)	Cs-134 Cs-137	1	Once per year	Ministry of the Environment
	E-71, E-72, E-73, E-74, E-75, E-76, E-77, E-78, E-79, E-7A, E-7B, E-7F, E-7G, E-7H, E-7I (See Figs. 2 and 4)	Cs-134 Cs-137[*1]	1×10^{1}	Once every one to two months	Ministry of the Environment
	F-P05, F-P06[*2] (See Fig. 4)	Cs-134 Cs-137	1.5	Once every three months	Fukushima Prefectural Government
		Sr-90	2.5×10^{-1}		
		Pu-238 Pu-239+240	2×10^{-2}		
	F-P10, F-P11[*2] (See Fig. 4)	Cs-134 Cs-137	1.5	Once every three months	Fukushima Prefectural Government
		Sr-90	2.5×10^{-1}	Once per year	
		Pu-238 Pu-239+240	2×10^{-1}	Once per year	
	F-P12[*2] (See Fig. 2)	Cs-134 Cs-137	1.5	Once per year	Fukushima Prefectural Government
		Sr-90	2.5×10^{-1}		
		Pu-238 Pu-239+240	2×10^{-1}		
	F-P29, F-P30, F-P31, FP32, F-P33, F-P34,	Cs-134 Cs-137	1×10^{1}	Twice per year to once per	Fukushima Prefectural

	F-P35, F-P49, F-P50, F-P51, FP52, F-P53, F-P54, F-P55, F-P56, F-P57, F-P58, FP59, F-P60, F-P61, F-P62, F-P63, F-P64, F-P65, FP66, F-P67, F-P68, F-P69, F-P70, F-P71, F-P72, FP73, F-P74, F-P75, F-P76, F-P77, F-P78, F-P79, FP80, F-P81, F-P82, F-P83 (See Fig.2)			month	Government
Ibaraki Prefecture	E-81, E-82, E-83, E-84, E-85 (See Figs. 5 and 6)	Cs-134 Cs-137*1	1×10^{1}	Once every three to four months	Ministry of the Environment

*1… If necessary, Sr-90 will be analyzed as needed at some locations, e.g., locations with high concentrations of Cs-134 and Cs-137.

*2… Other γ-ray emitting nuclides (Cr-51, Mn-54, Co-58, Fe-59, Co-60, Zr-95, Nb-95, Ru-106, Sb-125, Ce-144) will also be monitored.

(3) Offshore sea area

Monitoring will be conducted in accordance with Table 9.

Table 9: Monitoring of sea sediment in the offshore sea area

Sampling points	Radionuclide	Detection limit (Bq/kg dry soil)	Frequency of analysis	Implementing entity
M-A1, M-A3, M-MI4, M-B1, M-B5, M-C1, M-C3, M-D3, M-E3, M-E5, M-F3, M-G0, M-G1, M-G3, M-G4, M-H1, M-H3, M-I0, M-I3, M-IB2, M-J3, M-K1, M-IB4, M-L1, M-L3, M-M1 (See Figs. 1, 2, 5, 6)	Cs-134 Cs-137	1	Once every three months	Nuclear Regulation Authority
M-D1, M-F1, M-J1 (See Figs. 2, 5)	Cs-134 Cs-137	1	Once every three months	Nuclear Regulation Authority
	Sr-90	2×10^{-1}	Once every three months	
M-B3, M-E1, M-I1 (See Figs. 1, 2)	Pu-238 and Pu-239+240	1×10^{-2}	Once per year	Nuclear Regulation Authority
	Am-241	2×10^{-2}	Once per year	Nuclear Regulation Authority
	Cm-242 and	1×10^{-2}	Once per	Nuclear

	Cm-243+244		year	Regulation Authority

(4) Open sea

Sampling of sea sediment will not be performed.

(5) Tokyo Bay

Monitoring will be conducted in accordance with Table 10.

Table 10: Monitoring of sea sediment in Tokyo Bay

Sampling points		Radionuclide	Detection limit (Bq/kg dry soil)	Frequency of analysis	Implementing entity
Estuaries	E-T1, E-T2, E-T3, E-T4, E-T5, E-T6, E-T7, E-T8 (See Fig. 8)	Cs-134 Cs-137	1×10^{1}	Four to seven times per year	Ministry of the Environment
	M-C1, M-C3, M-C4, M-C7, M-C8, M-C10, C-P1, C-P2, C-P3, C-P4, C-P5, C-P8 (See Fig. 8)	Cs-134 Cs-137	1	Once every three months	Nuclear Regulation Authority
Middle of the bay	K-T1, K-T2 (See Fig. 8)	Cs-134 Cs-137	1	Six times per year	Nuclear Regulation Authority
	M-C2, M-C5, M-C6, M-C9 (See Fig. 8)	Cs-134 Cs-137	1	Once every three months	Nuclear Regulation Authority

4-3 Monitoring of marine biota

The monitoring of marine biota primarily in sea areas in Fukushima Prefecture will be conducted in accordance with Table 11, taking the results of monitoring conducted to date into account.

Table 11:Monitoring of marine biota

Applicable sea area	Target	Radionuclide	Detection limit *1 (Bq/kg wet weight)	Frequency of analysis	Implementing entity
Coastal sea area	Fish	Cs-134 Cs-137*2	1×10^{1}	Once per month	TEPCO
		H-3	1×10^{-1}※3 (Tissue Free Water Tritium)	Once per month	

			5×10^{-1} (Organically Bound Tritium)		
Nearshore sea area	Seaweed	Cs-134 Cs-137	2×10^{-1}	Three times per year	TEPCO
		I-129	1×10^{-1}		
		H-3	1×10^{-1}※3 (Tissue Free Water Tritium) 5×10^{-1} (Organically Bound Tritium)		
Coastal sea area Offshore sea area Open sea	Fishery products	Cs-134 Cs-137	1×10^{1}	Once per week*4	Fisheries Agency*5
		H-3*7	3×10^{-1}~1	380 samples per year	
Nearshore sea area Coastal sea area	Aquatic organism *6	Cs-134 Cs-137*2	1×10^{-3}~ 1×10^{-2}	Three times per year	Ministry of the Environment
	Fish	H-3	1×10^{-1} (Tissue Free Water Tritium) 5×10^{-1} (Organically Bound Tritium)	Four times per year	
		C-14	2	Four times per year	
	Seaweed	I-129	1×10^{-1}	Four times per year	

*1… The unit of detection limit for tritium is Bq/L.

*2… Sr-90 will also be measured if necessary (detection limit is 2×10^{-2} Bq/kg (wet weight)).

*3… For the time being, the detection limit will be 4×10^{-1} Bq/L depending on installation of the electrolytic enrichment devices.

*4… Depending on the target item and local government, the frequency of monitoring can be set taking the past monitoring results into account.

*5… Fisheries Agency monitors fishery products with a focus on radioactive cesium to ensure food safety and consumer confidence based on the "Concepts of Inspection Planning and the Establishment and Cancellation of Items and Areas to which Restriction of Distribution and/or Consumption of Foods concerned Applies". In addition, monitoring of tritium is conducted in accordance with the Basic Policy and others, taking into consideration the requests of local stakeholders. The results of fishery products monitoring also contribute to the data for sea area monitoring. Hence, fishery products monitoring is included in this plan.

*6… Prey species are included in monitoring so that they can be used to grasp the mechanism of bioaccumulation of radioactive materials through the food chain.

*7… The Frequency of analysis “380 samples per year” includes the samples to be analyzed by the rapid analysis method with a detection limit of about 1×10^{1}Bq/L.

*… Applicable body part of the target shown in Table 11 will be entrusted to a measurement entity.

5 Other matters

- Seawater monitoring focused on leaks of contaminated water from TEPCO’s Fukushima Daiichi NPS will also be conducted.
- Each implementing entity will measure concentrations of radioactive materials pursuing detection limits in Tables 2 through 11.


141° 東
142° 東
39° 北
38° 北
Iwate
Miyagi
大船渡
陸前高田
一関
気仙沼
石巻
塩竈
北上川
旧北上川
鳴瀬川
名取川
E-37
E-31
E-38
E-39
E-32
E-41
E-42
E-3A
E-43
E-4J
T-MG0
E-44
M-A1
M-A3
E-45
E-46
E-4K
E-47
T-MG1
E-48
E-4L
T-MG2
E-49
E-4A
T-MG4
M-MI4
E-4F
E-4G
T-MG3
E-4M
E-4H
E-4B
T-MG5
T-MG6
M-B1
M-B3
E-4C
E-S17
M-B5
100
200
300
400
500
600
700
凡例
Monitoring survey point
0
10
20 km

Fig.1

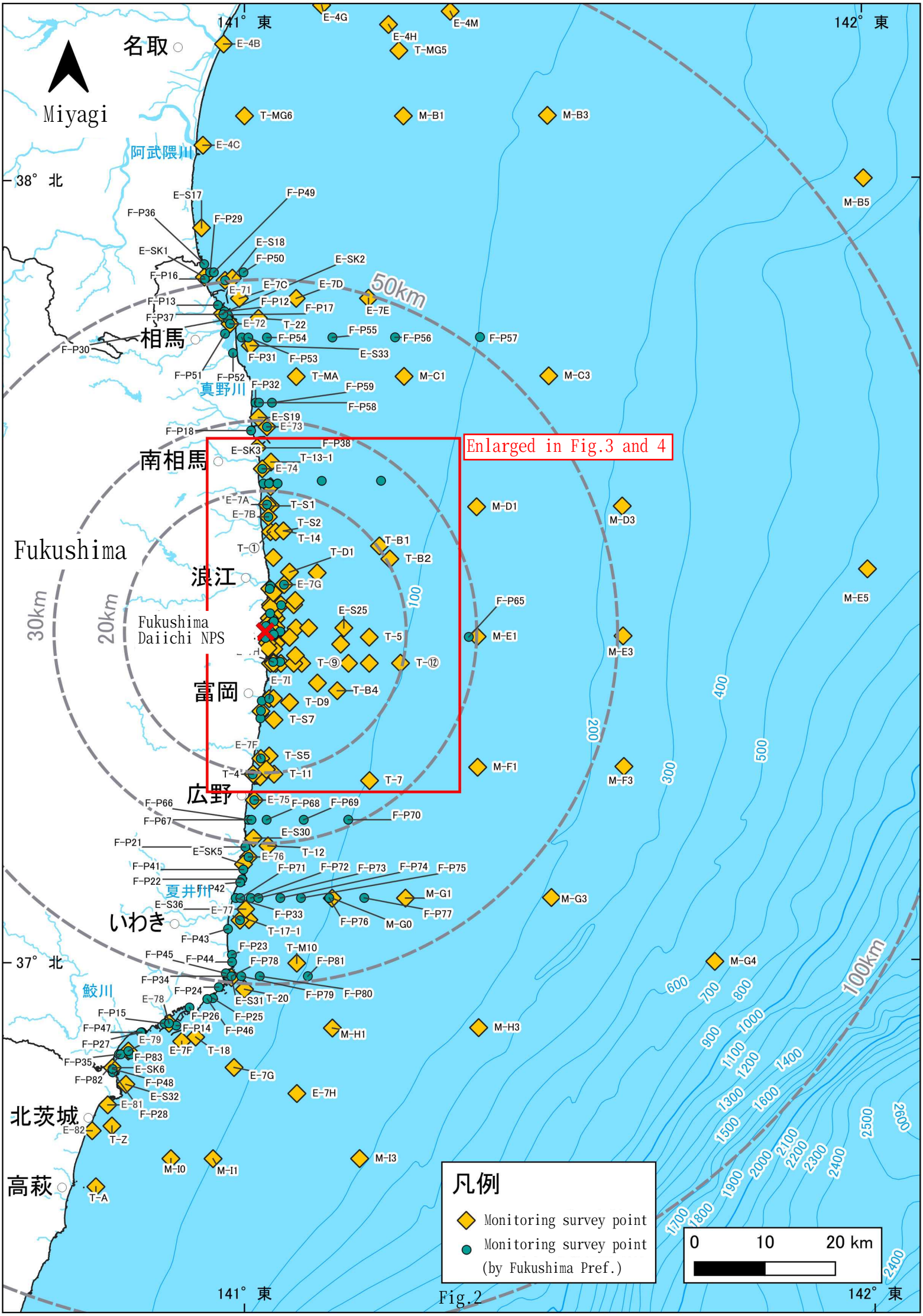

141° 東
142° 東
38° 北
37° 北
名取
Miyagi
阿武隈川
相馬
真野川
南相馬
Fukushima
浪江
Fukushima
Daiichi NPS
富岡
広野
夏井川
いわき
鮫川
北茨城
高萩
30km
20km
50km
100km
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
Enlarged in Fig.3 and 4
凡例
Monitoring survey point
Monitoring survey point
(by Fukushima Pref.)
0
10
20 km

Fig.2

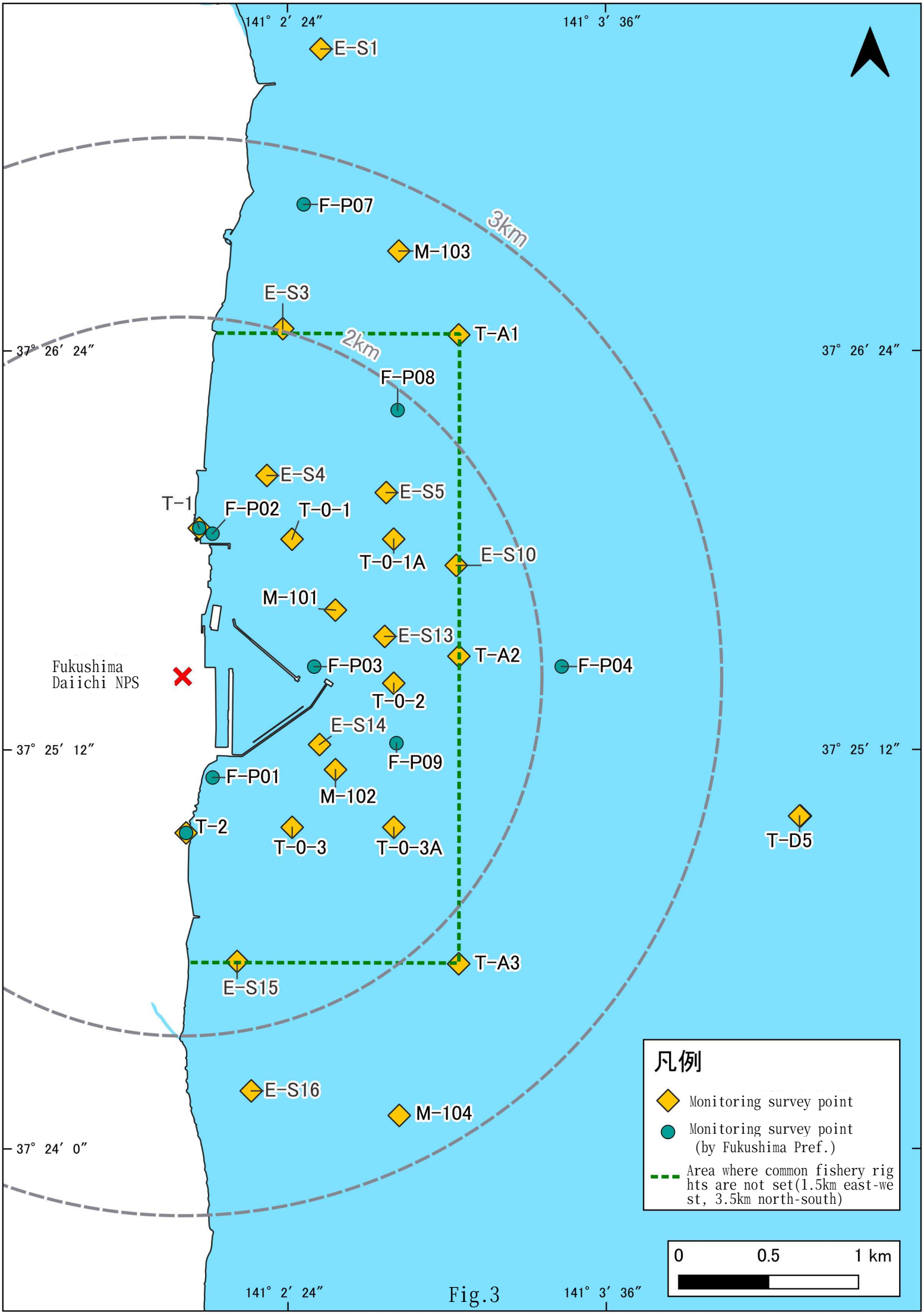

141° 2′ 24″
141° 3′ 36″
37° 26′ 24″
37° 25′ 12″
37° 24′ 0″
E-S1
F-P07
M-103
E-S3
T-A1
F-P08
E-S4
E-S5
T-1
F-P02
T-0-1
T-0-1A
E-S10
M-101
E-S13
T-A2
F-P04
F-P03
T-0-2
E-S14
F-P09
F-P01
M-102
T-2
T-0-3
T-0-3A
T-D5
T-A3
E-S15
E-S16
M-104
3km
2km
Fukushima
Daiichi NPS
凡例
Monitoring survey point
Monitoring survey point
(by Fukushima Pref.)
Area where common fishery rights are not set(1.5km east-west, 3.5km north-south)
0
0.5
1 km

Fig.3

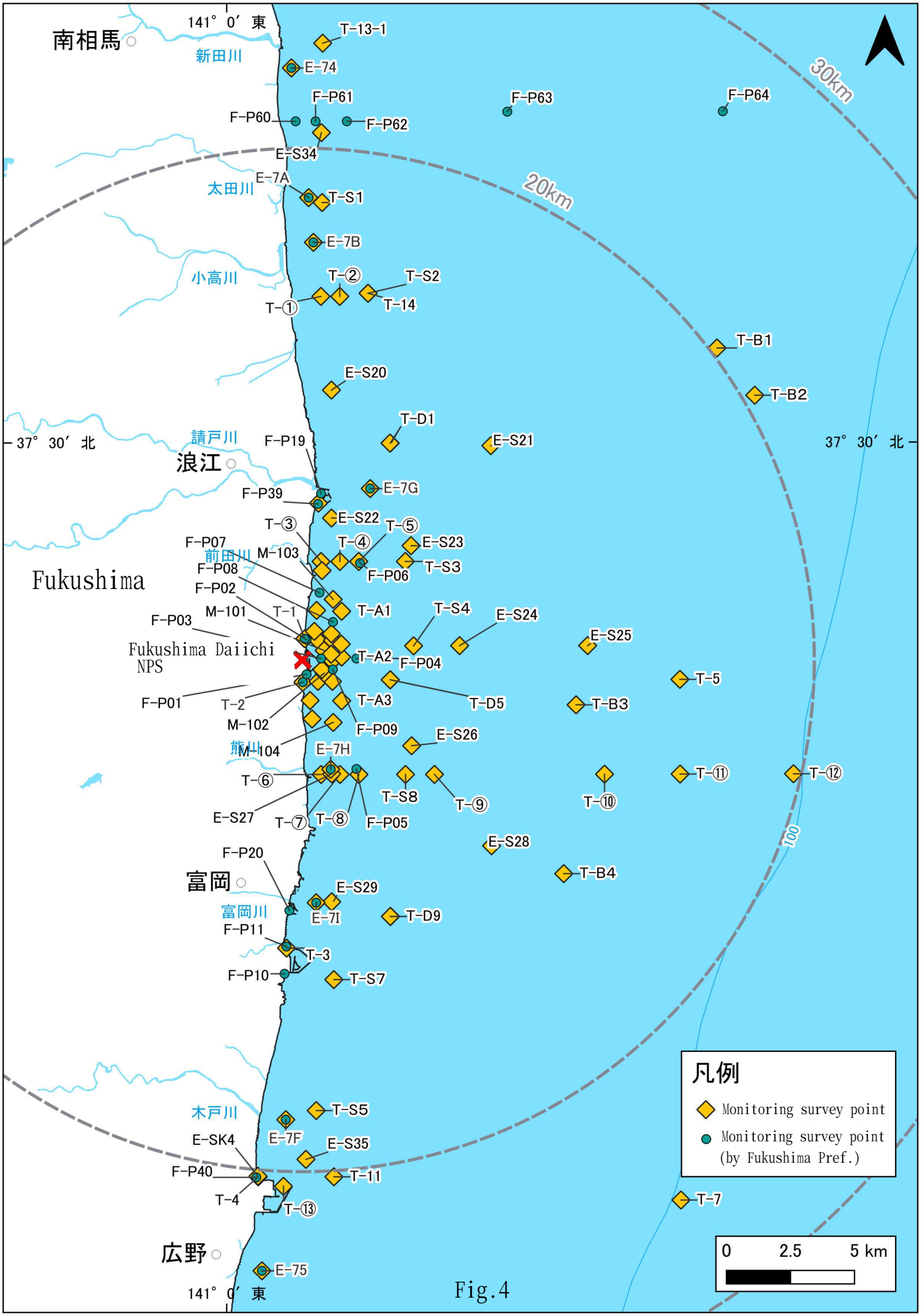

141° 0′ 東
南相馬
新田川
T-13-1
E-74
F-P61
F-P63
F-P64
F-P60
F-P62
E-S34
30km
20km
太田川
E-7A
T-S1
E-7B
小高川
T-②
T-S2
T-①
T-14
T-B1
E-S20
T-B2
T-D1
請戸川
37° 30′ 北
F-P19
E-S21
浪江
E-7G
F-P39
E-S22
T-③
T-⑤
T-④
E-S23
F-P07
M-103
前田川
T-S3
F-P08
F-P06
Fukushima
F-P02
T-A1
T-S4
E-S24
F-P03
M-101
T-1
E-S25
Fukushima Daiichi
NPS
T-A2
F-P04
T-5
F-P01
T-2
T-A3
T-D5
T-B3
M-102
F-P09
E-S26
熊川
M-104
E-7H
T-⑥
T-⑪
T-⑫
T-S8
T-⑨
T-⑩
E-S27
T-⑦
T-⑧
F-P05
100
E-S28
F-P20
T-B4
富岡
E-S29
富岡川
E-7I
T-D9
F-P11
T-3
F-P10
T-S7
木戸川
T-S5
E-7F
E-SK4
E-S35
F-P40
T-11
T-4
T-⑬
T-7
広野
E-75
141° 0′ 東
凡例
Monitoring survey point
Monitoring survey point
(by Fukushima Pref.)
0
2.5
5 km

Fig.4

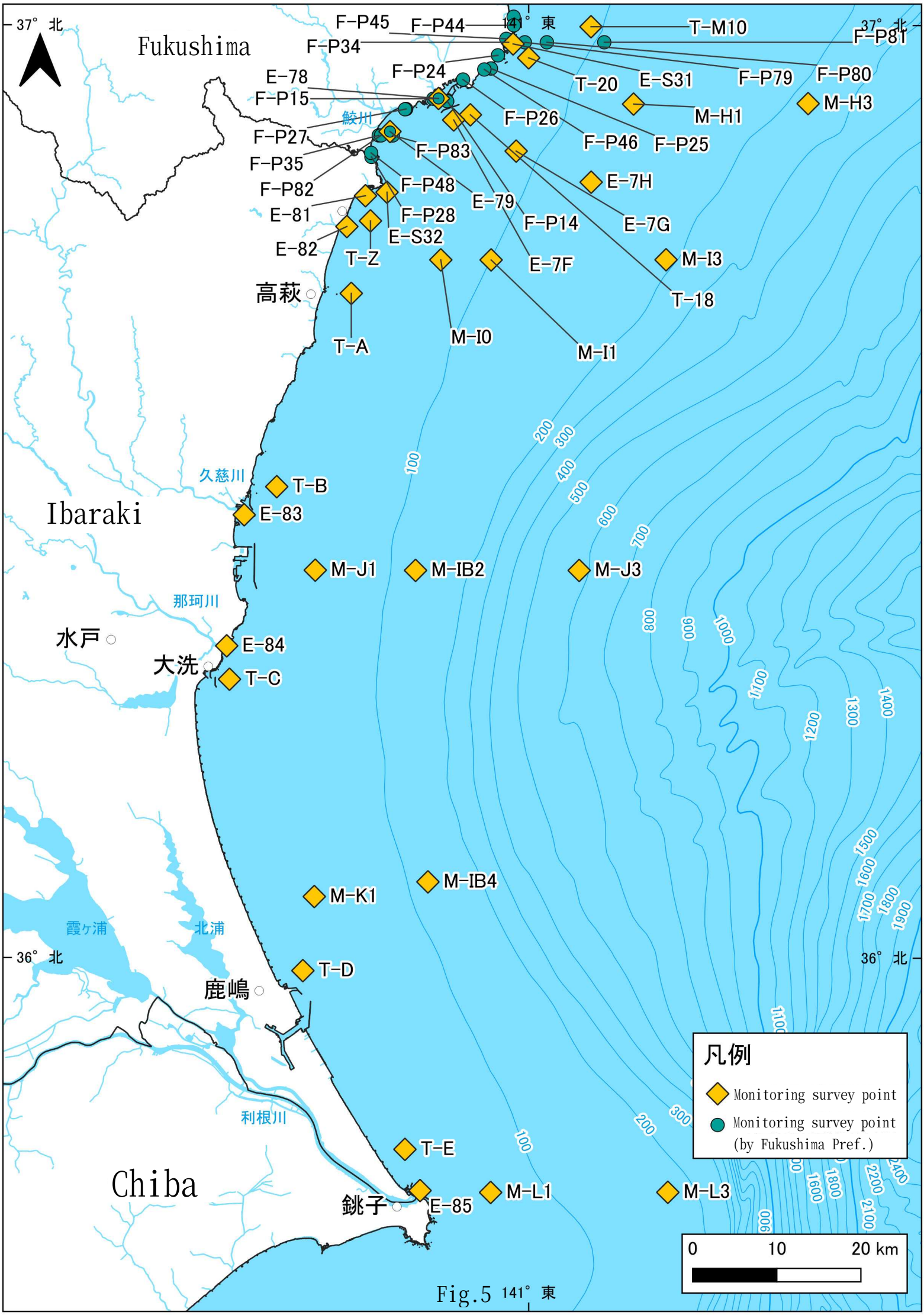

37° 北
141° 東
Fukushima
F-P45
F-P44
F-P34
F-P24
F-P15
F-P27
F-P35
F-P82
E-78
E-81
E-82
F-P48
F-P28
E-S32
T-Z
F-P83
F-P26
F-P46
F-P25
T-20
E-S31
F-P79
F-P80
T-M10
F-P81
M-H1
M-H3
E-7H
E-7G
E-7F
F-P14
E-79
M-I3
T-18
M-I0
M-I1
T-A
高萩
鮫川
久慈川
T-B
E-83
Ibaraki
M-J1
M-IB2
M-J3
那珂川
水戸
E-84
大洗
T-C
M-IB4
M-K1
霞ヶ浦
北浦
36° 北
T-D
鹿嶋
利根川
T-E
Chiba
銚子
E-85
M-L1
M-L3
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2400
凡例
Monitoring survey point
Monitoring survey point
(by Fukushima Pref.)
0
10
20 km

Fig.5

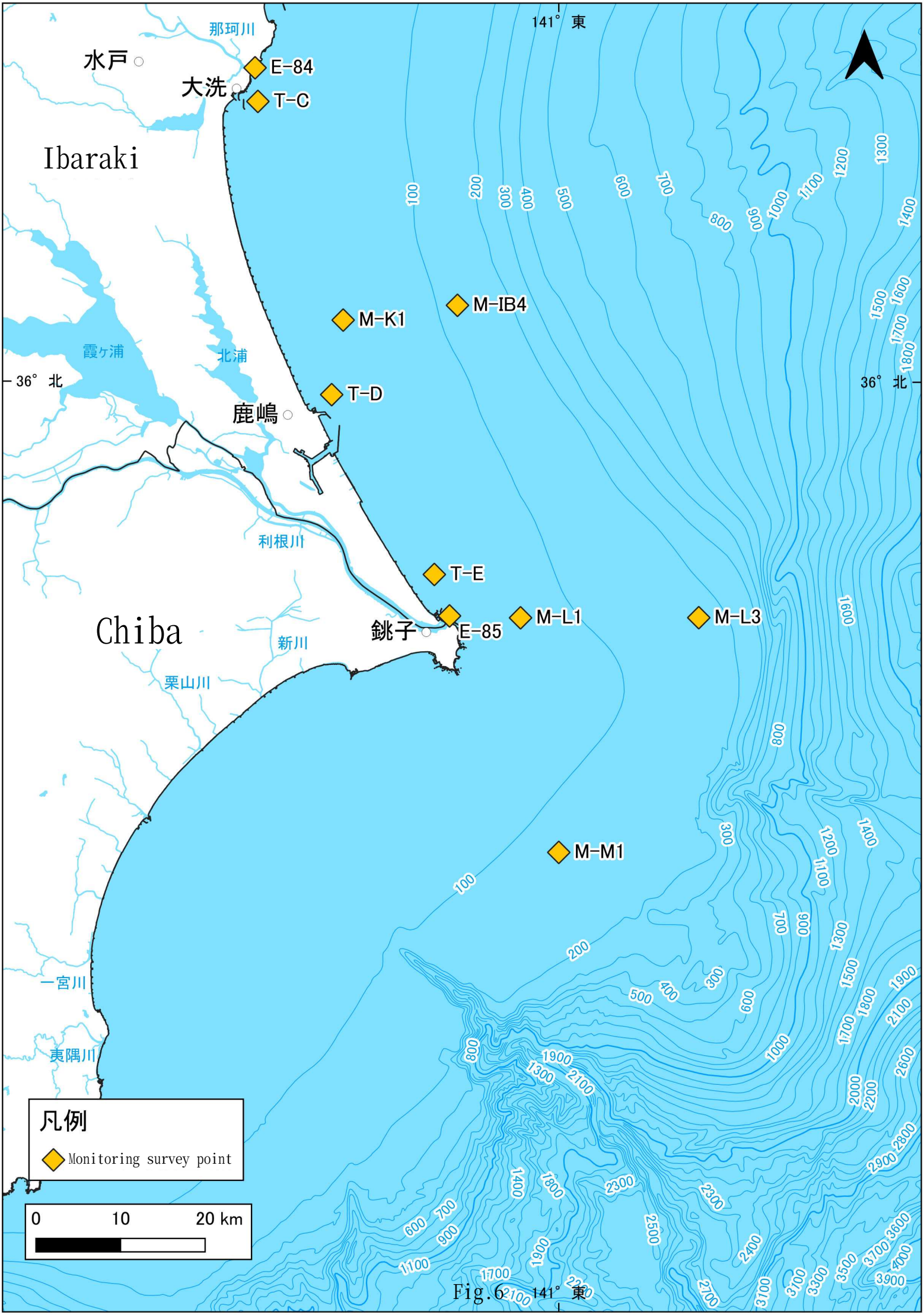

141° 東
36° 北
那珂川
水戸
大洗
E-84
T-C
Ibaraki
M-K1
M-IB4
霞ケ浦
北浦
T-D
鹿嶋
利根川
T-E
Chiba
銚子
E-85
M-L1
M-L3
新川
栗山川
M-M1
一宮川
夷隅川
凡例
Monitoring survey point
0
10
20 km

Fig. 6

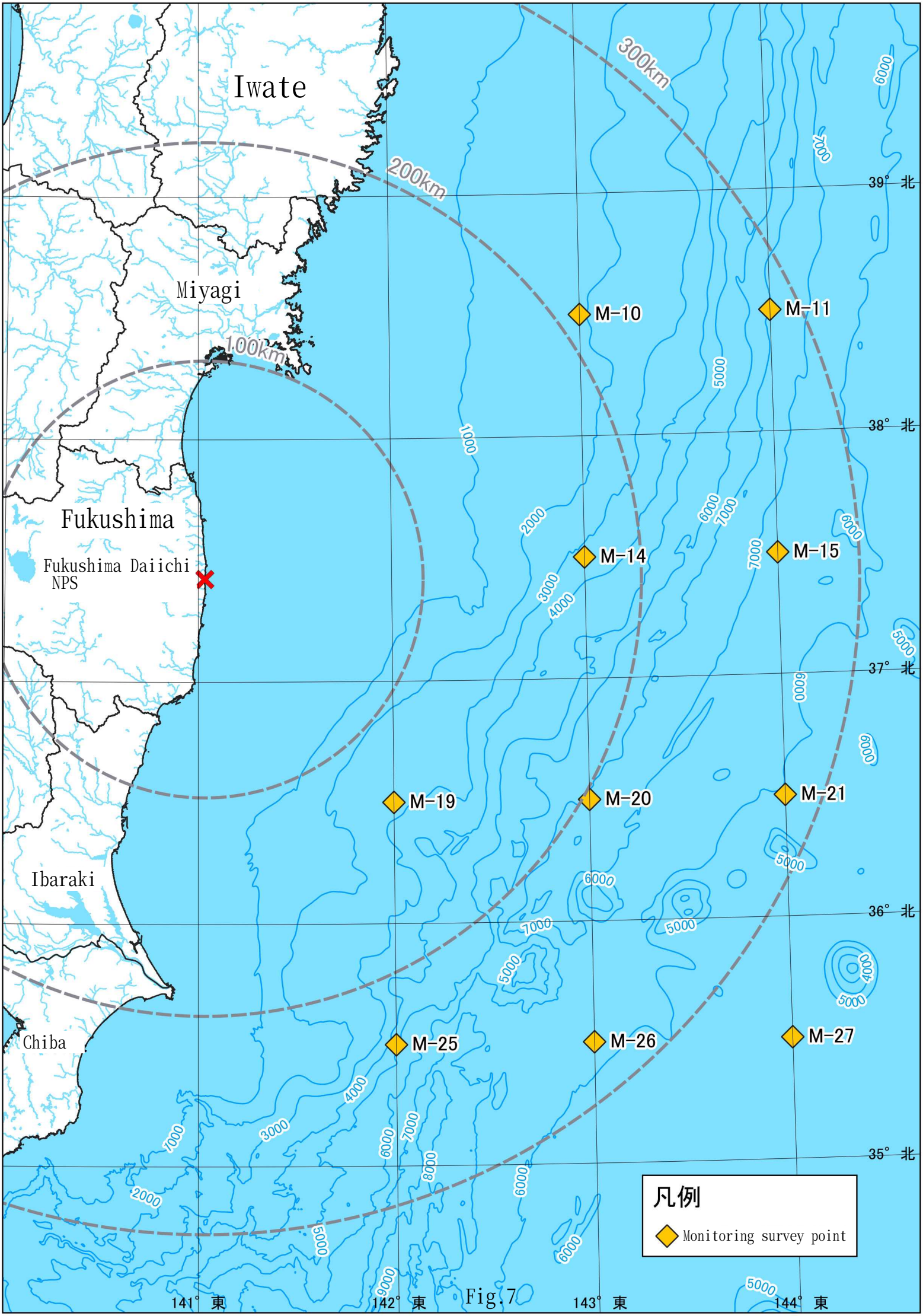

Iwate
Miyagi
Fukushima
Fukushima Daiichi NPS
Ibaraki
Chiba
300km
200km
100km
M-10
M-11
M-14
M-15
M-19
M-20
M-21
M-25
M-26
M-27
39° 北
38° 北
37° 北
36° 北
35° 北
141° 東
142° 東
143° 東
144° 東
凡例
Monitoring survey point

Fig.7

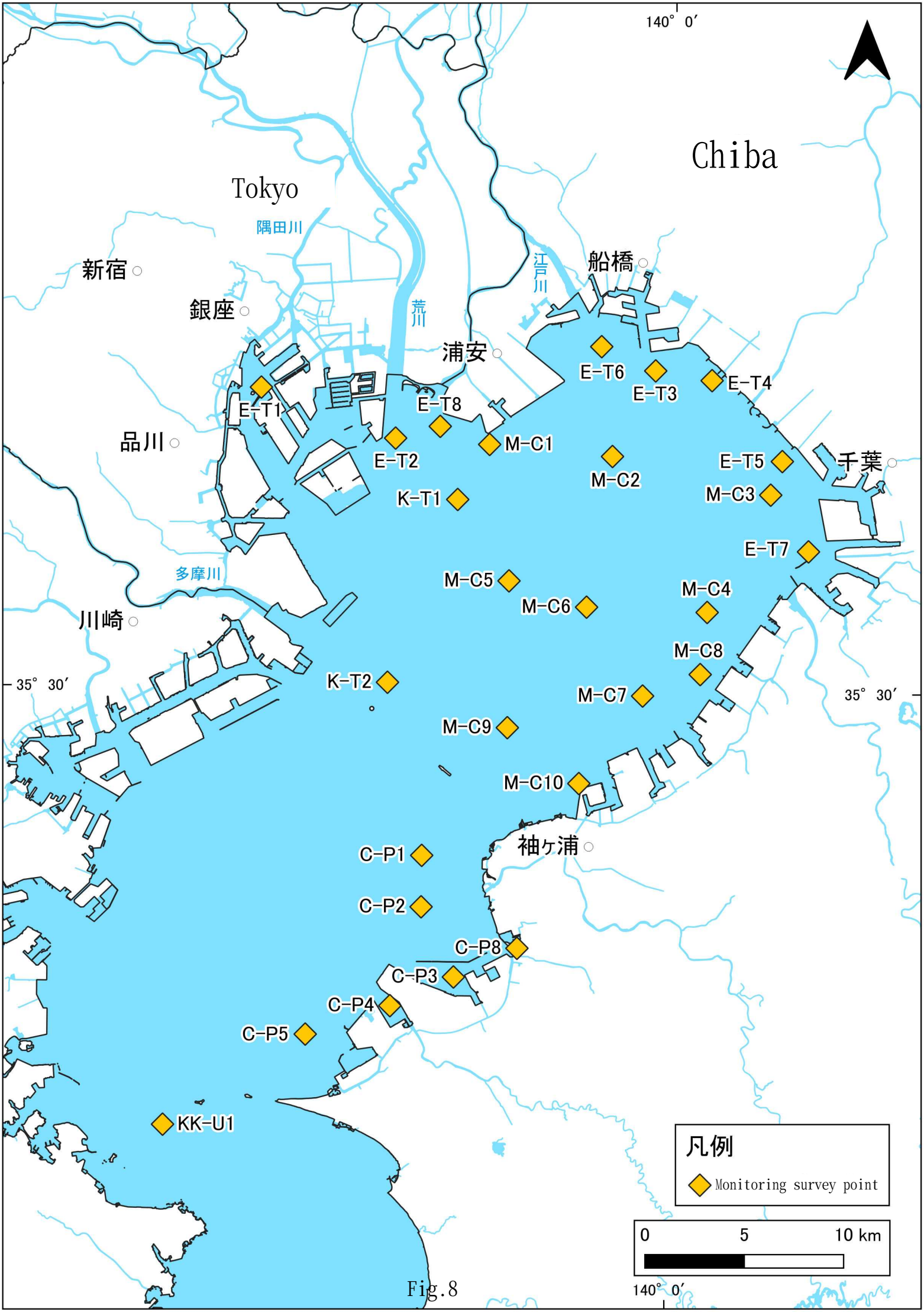
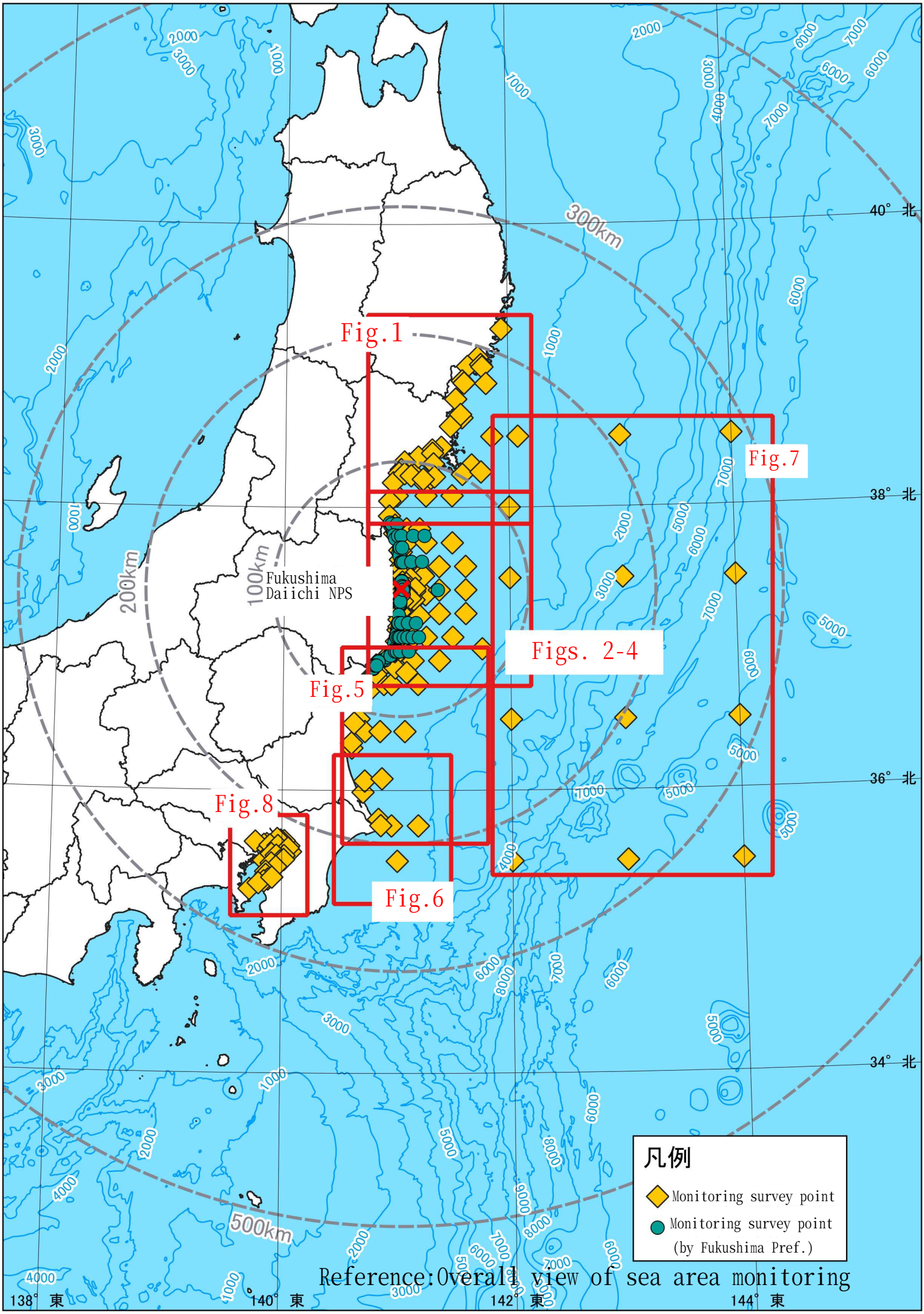

140° 0′
Chiba
Tokyo
隅田川
荒川
江戸川
新宿
銀座
浦安
船橋
品川
千葉
川崎
多摩川
E-T1
E-T2
E-T3
E-T4
E-T5
E-T6
E-T7
E-T8
K-T1
K-T2
M-C1
M-C2
M-C3
M-C4
M-C5
M-C6
M-C7
M-C8
M-C9
M-C10
C-P1
C-P2
C-P3
C-P4
C-P5
C-P8
KK-U1
袖ケ浦
35° 30′
凡例
Monitoring survey point
0
5
10 km
140° 0′

Fig.8



Reference:Overall view of sea area monitoring