Final Report

1. Abstract

In order to define Blue Carbon more accurately, we investigated a new concept, namely, Urban Blue Carbon, which is composed of complex components produced by cities and urban areas. For this research, we conducted a field study to measure the CO_2 absorption and fixation volume of Urban Blue Carbon.
The field study is conducted in Kanazawa Bay, Yokohama’s coastal area. We studied the CO_2 concentration in seawater and the influential factors, and investigate their relationships.
An overview of the research, its schedule, and location are provided below.

Table 1: Research Overview

	Overview
Objective	To study the relationship between the CO_2 concentration and fixation and the influential factors (inflow of drainage from the city, etc.) in Kanazawa Bay
Location	Kanazawa Bay (Yokohama’s coastal area)
Research items	1. Study of CO_2 concentration and water quality in Kanazawa Bay Organic carbon, chlorophyll concentration, nutritive salt concentration, water temperature, salinity, turbidity, dissolved oxygen concentration, dissolved organic material volume, quantity of light, etc. 2. Study of biomass of seaweeds 3. Study of carbon stocks in sediments

Table 2: Research Schedule

	Research Period	Research Contents
Preliminary Research A	December 2016 February 2017	Study of CO_2 concentration and water quality in seaweed cultivation locations and the open sea
Preliminary Research B	October 2017 - March 2018	(1) Study of CO_2 concentration and water quality in Kanazawa Bay (2) Study of biomass of seaweeds ・Kelp
Main Research	June 2018 - October 2018	(1) Study of CO_2 concentration and water quality in Kanazawa Bay
	October 2018 - March 2019	

	June 2018	(2) Study of biomass of seaweeds ・Eelgrass
		・Ulva
	October 2018 - March 2019	・Kelp
		・Wakame
	January 2019 - March 2019	(3) Study of carbon stocks in sediments

*: Combined with the main research results then organized (): Scheduled report contents

Figure 1: Research Points (Main research)

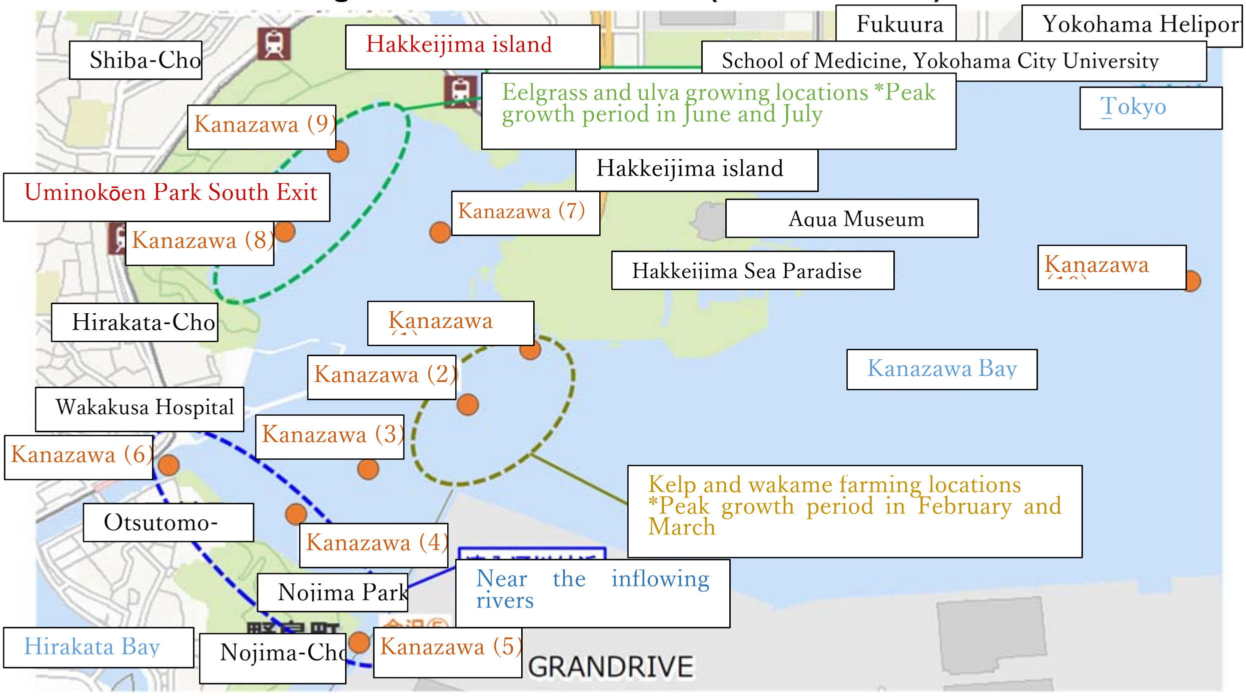

Table 3: Research Points' Positioning

Point Name	Positioning
Kanazawa (1)	Kelp cultivation inland location point. This current research period was outside the cultivation season.
Kanazawa (2)	Wakame cultivation inland location point. This current research period was outside the cultivation season.
Kanazawa (3)	An intermediate point between Kanazawa (2) and Kanazawa (4).
Kanazawa (4)	Nojima Park point. A location where eelgrass is grown (Slightly sparse in comparison to Kanazawa (8) and Kanazawa (9)).
Kanazawa (5)	Point within Nojima Waterway in the mouth of Hirakata Bay. There is inflow from the rivers flowing into Hirakata Bay, and discharged water from the factories in Natsujima within Nojima Waterway.
Kanazawa (6)	Point in the Nojima channel in the mouth of Hirakata Bay. There is inflow from the rivers flowing into Hirakata Bay.

Kanazawa (7)	Point offshore from Kanazawa (8) and Kanazawa (9).
Kanazawa (8)	Point within the location where eelgrass and ulva are growing at the Uminokōen Park.
Kanazawa (9)	Point within the location where eelgrass and ulva are growing at the Uminokōen Park.
Kanazawa (10)	Input point from the open sea. The farthest point from the location where eelgrass and ulva are growing and the location where kelp is cultivated, and where the affect from inflowing rivers is less likely, and the affect from the open sea is more likely.

2. Main Research Overview

An overview of the research conducted from June to October 2018 onward is given below.

① Research on CO_2 Concentration and Water Quality in Kanazawa Bay

(1) Overview

Research Frequency:

Approximately once every 2 weeks. (Conducted once in the morning and once in the afternoon. A water sample is taken from the surface layer and from the bottom layer.)

Work Procedure:

(1) Move to a specific point in the research zone as indicated in Figure 2 via boat and obtain water samples from the surface and the bottom layers.

(2) At the specific point (1), by using a rope, lower the measurement devices from the surface layer to the bottom layer and obtain sample data.

(3) The obtained samples are either filtered or stabilized and stored in a cold dark place.

The above steps (1) to (3) are conducted once in the morning and once in the afternoon.

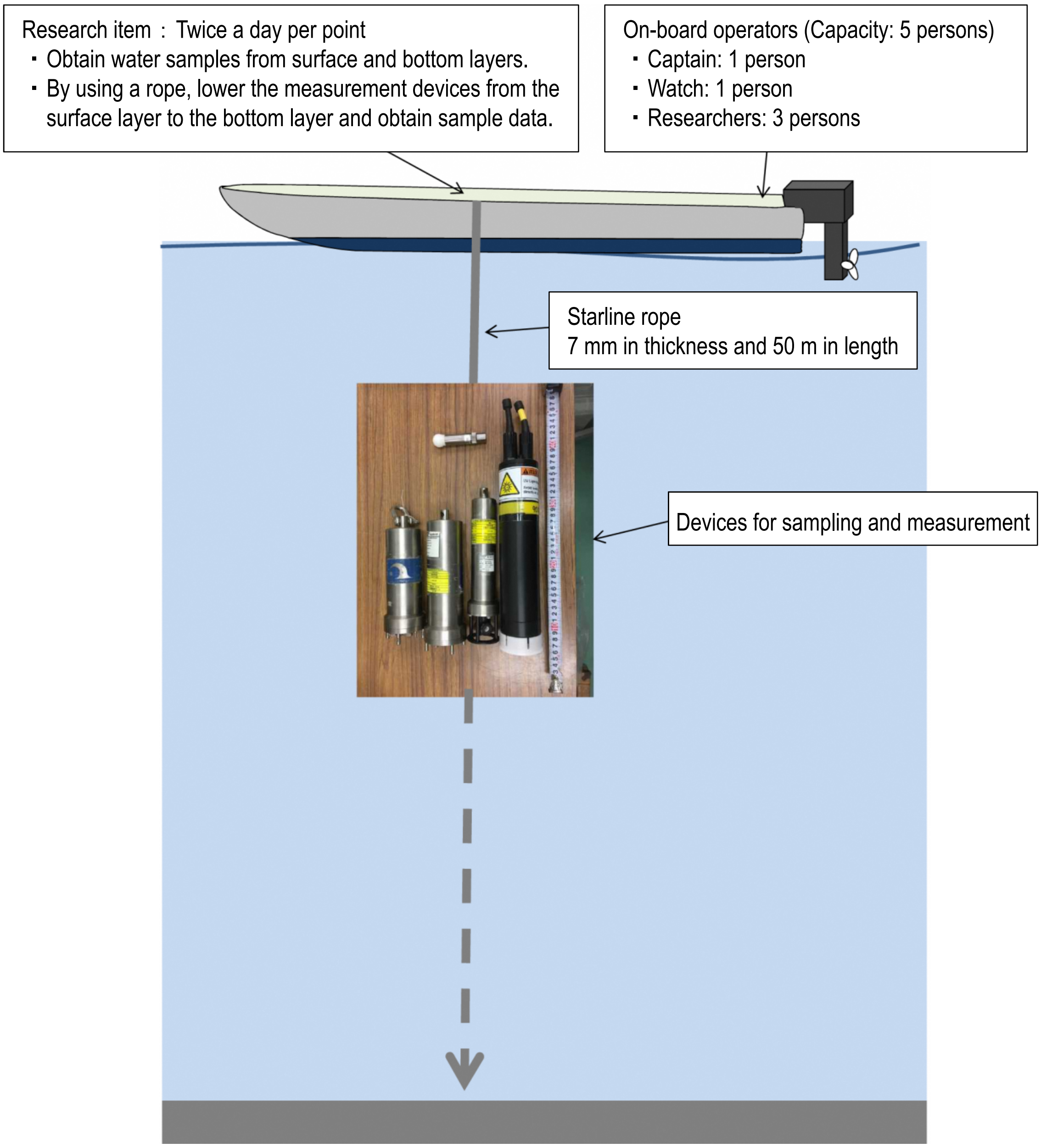

Figure 2: Water Sample CollectionWater Sample Collection Water Sample Collection Method

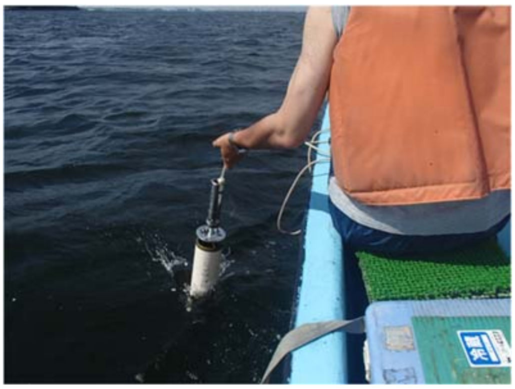

Figure 2: Water Sampling

Table 4: Research Schedule (June 2018 to early Oct)

Research Stage	Date	Weather
1st time	June 19, 2018	Clear
2nd time	July 4, 2018	Cloudy
3rd time	July 19, 2018	Clear
4th time	August 1, 2018	Clear
5th time	August 23, 2018	Partly cloudy
6th time	August 28, 2018	Cloudy
7th time	September 13, 2018	Cloudy
8th time	September 26, 2018	Cloudy
9th time	October 10, 2018	Light cloud and occasionally clear

(2) Research Results

The results for the average CO_2 partial pressure for all research at each point are indicated in Figure 4. In Kanazawa Bay, the water mass flowing in from Tokyo Bay during the rising tide passes through the primary production in the bay and flows out of the bay during the falling tide. Based on this, to understand the CO_2 absorption behavior after the primary production has occurred in Kanazawa Bay, the CO_2 partial pressure during the falling tide at each point was extracted and a graph created. The time of the falling tide as determined from the tide level data of the Yokosuka automatic tide-gauge station under the jurisdiction of the Japan Coast Guard.

The result for this period of research, which included June and July when the eelgrass is flourishing, among the 10 points in the Kanazawa region, was that there

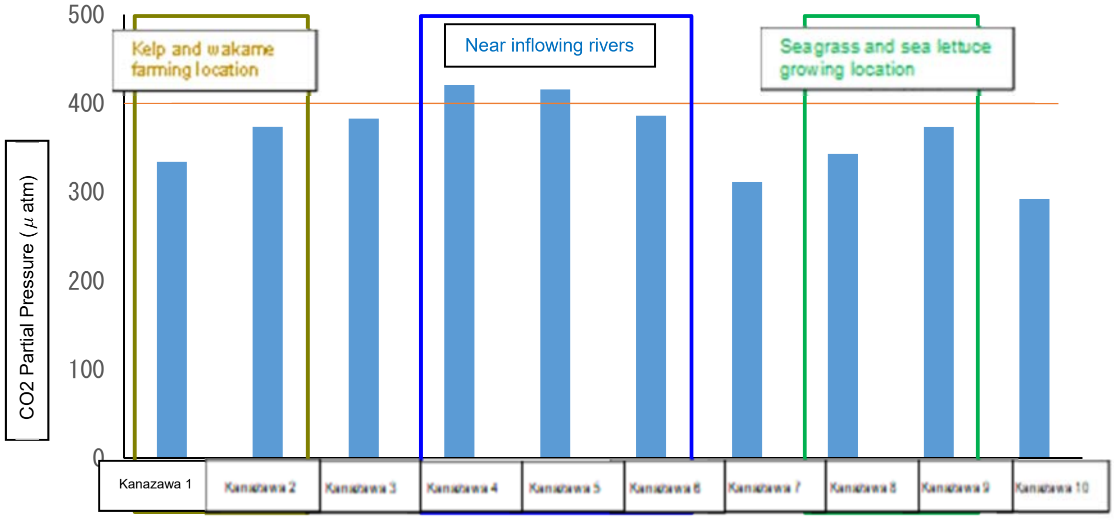

Figure 4: Average CO2 Partial Pressure for All Studies at Each Point

was a trend of CO_2 absorption at 8 points including the location where eelgrass is grown, while there was a trend of CO_2 emission at the 2 points within the location near the inflowing rivers. In addition, at the points within the location where kelp and wakame are cultivated, there was a trend of CO_2 absorption even outside the cultivation period.

*Only the falling tide data for a total of 9 studies from 6/19 - 10/10 were extracted and a graph created

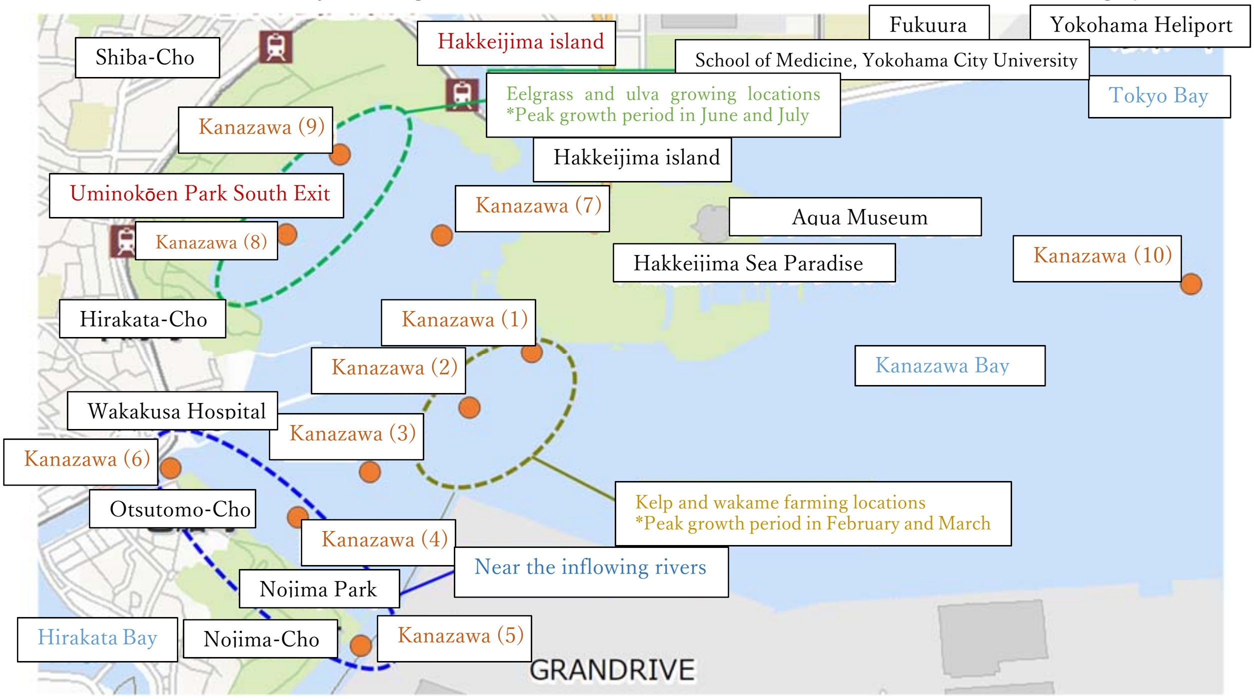

Figure 5: Research Points (Main Research)

② Seaweed Biomass Research

We researched the biomass of seaweeds in Kanazawa Bay.

The below provide an overview of the results for eelgrass.

Table 5: Overview of Seaweed Biomass Research

Species	Distribution	Period	Location	Note
Eelgrass	Natural	June 2018	Uminokōen Park	
Ulva	Natural	June 2018	Uminokōen Park	Conducted simultaneously with research on eelgrass
Kelp	Artificial (Cultivation)	From Oct. 2018 to Mar. 2019	South of Hakkeijima Island	
Wakame	Artificial (Cultivation)	From Oct. 2018 to Mar. 2019	South of Hakkeijima Island	

(1) Eelgrass Research

To measure the current volume of eelgrass in Uminokōen Park, we researched the dimension and wet weight per unit area of eelgrass in June, the month in which it grows densely, in a controlled area in Uminokōen Park. To ensure the accuracy of the research, we limited the research area within dense-growth area.

An overview of the research is provided in the table below.

Table 6: Eelgrass Research Overview

	Dimension research	Wet weight research
Time	Tuesday, June 26th, 2018	Same
Location	Uminokōen Park	Same*1
Conductor	Agency responsible for maintenance and management of Uminokōen Park (Kanazawa Rinkai Service), City of Yokohama	City of Yokohama
Method	・ Move to the outer rim of the dense-growth area of eelgrass and by using a simple GPS logger, record the location. ・ Calculate the dimension from the line data for the outer rim.	・ At 15 locations*2 in the dense-growth area of eelgrass, cut a tsubo (3.3 m^2) of eelgrass.*3 (Locations are set at a set interval from the ground to the offshore.) ・ Each cut sample is measured per location for wet weight, length, no. of rootstocks.

*1: To avoid an adverse effect on the eelgrass in the research area, eelgrass samples were cut within the area in which we had already cut eelgrass for boat routes.

*2: 6 locations in 2015, 15 locations in 2016, 15 locations in 2017.

*3: A 50 cm x 50 cm section of eelgrass was cut at each location within a quadrat.

1）Dimension Research

The following are the results of the research of the dimensions of dense-growth areas of eelgrass locations in Uminokōen Park. The dimensions (orange) of eelgrass locations this year fell greatly from the dimensions in past years (red, blue, green) (see Fig. 5).

2）Wet Weight Research

The following are the results of the research of the wet weight of dense-growth areas of eelgrass locations in Uminokōen Park.

The results of this year's study show that the wet weight and maximum length have fallen, but the number of rootstocks has increased since past years. The state in 2018 shows a higher number of rootstocks per unit dimension and a tendency for the maximum length to be lower than in past years. As the distribution area, it is assumed that because of a decline of the number of places where the water is deep and rootstocks tend to be large on the offshore side, there are now more small rootstocks in Uminokōen Park. It is assumed that the cause of this could be that in 2017, the year before the research year, typhoons approached three times (July 4, October 21, October 29), so that rough waves washed away eelgrass with long rootstocks or that high water temperature hampered its growth.

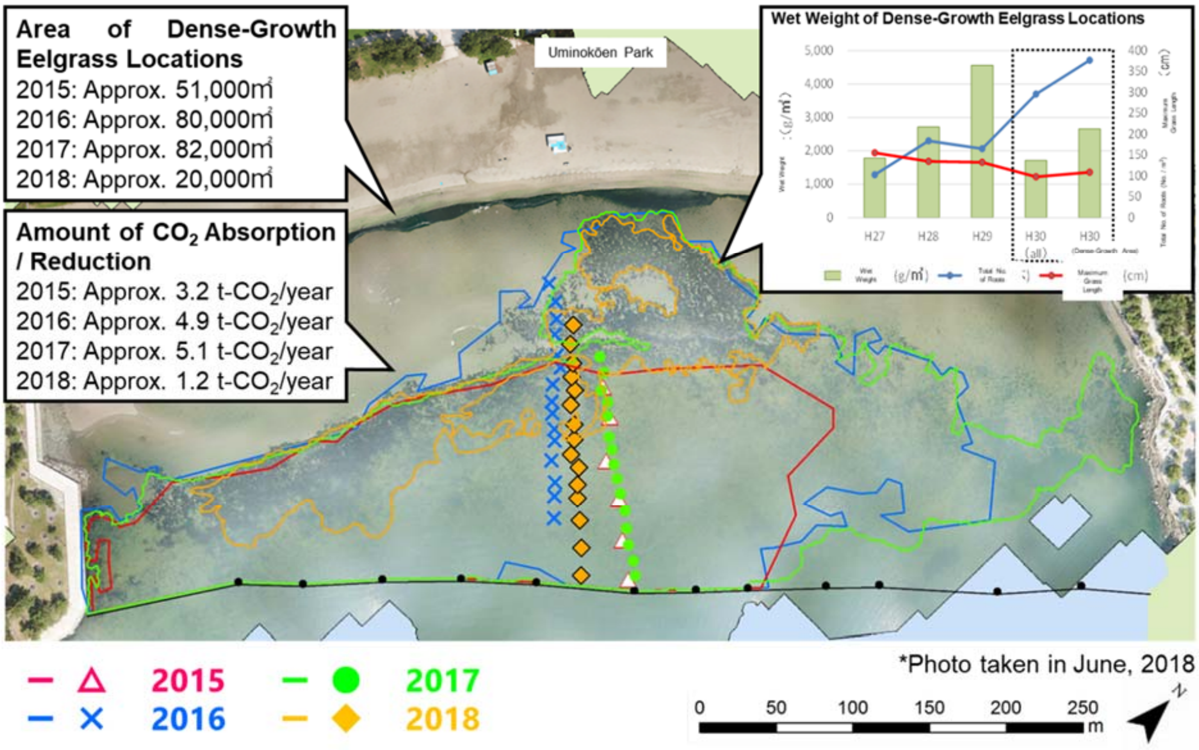

Figure 5　Results of research on eelgrass in Uminokōen Park (Dimensions, wet weight)

(2) Ulva

To measure the current volume of ulva in Uminokōen Park, we researched its wet weight. The following are an overview and results of the research, showing that even at the maximum, it is about 80 g/m^2 (see No. 9), which is far lower than that of eelgrass.

A tendency for the wet weight to be higher in deeper places (No. 8 to 15) than at shallow places (No. 1 to 7) is seen.

And even at the first experts round-table conference, Mr. Zama from Kanazawa Rinkai Service provided information showing that the quantity of Ulva that drifted ashore was about 20% of the quantity in a normal year, and that even offshore, it was extremely low this year.

Table7 : Overview of the research on ulva

	Wet weight research
Time	Tuesday, June 26th, 2018
Location	Uminokōen Park
Conductor	City of Yokohama
Method	・ Measurement at 15 locations, same as eelgrass research. ・ Sampling of all ulva in the quadrat covering the locations. ・ Wet weight was measured per location for each sample.

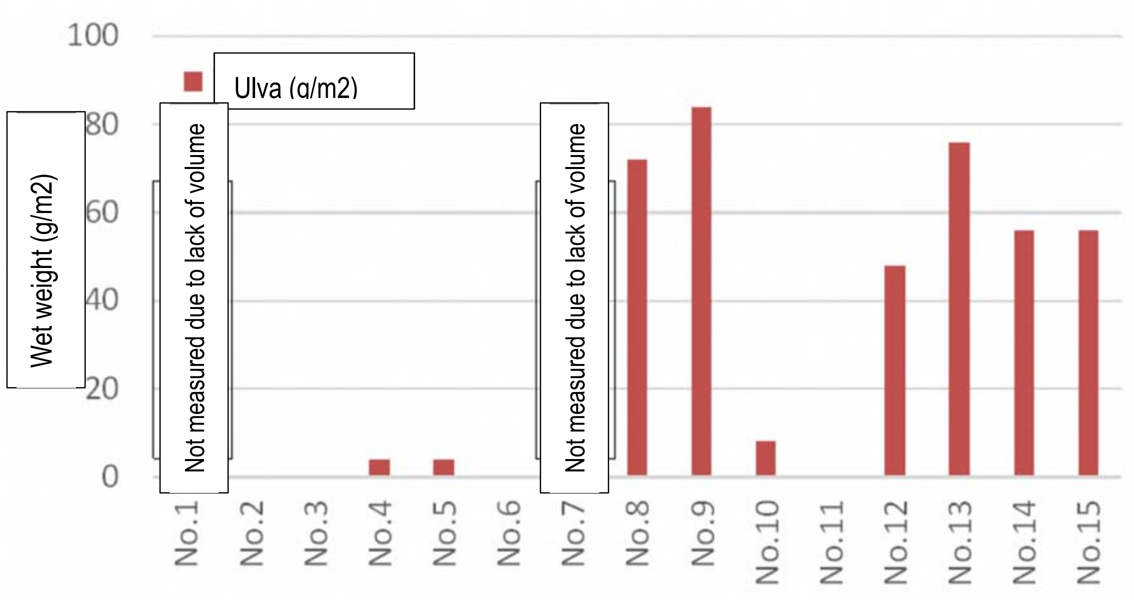

Figure6 : Wet weight of ulva per location in Uminokōen Park

（3）Kelp and Wakame

A biomass study was done in order to study carbon dynamics in sea areas including the large seaweed beds in Kanazawa Bay.

1) Study Procedure

(a) In seaweed beds (kelp, wakame) cultivated in the study area and natural seaweed beds (Sargassum fulvellum), we tagged about 50 rootstocks in each bed at the first survey.

(b) Among the cultivated seaweeds, tagged rootstocks were pulled up into a boat with ropes and the leaf length and leaf width of each rootstock, and rootstock density were measured during each study. After measurement, they were returned from the boat using ropes.

(c) In the natural seaweed beds, during each study, the boat was moved to a place where the water is about waist deep, two researchers got out of the boat and measured the leaf length and leaf width of each rootstock and the rootstock density that had been tagged.

(d) On the final research day, the tags on the seaweed were all recollected.

2） Research schedule table

Table 8 Kelp and wakame research schedule tables

2019/ Jan						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	**31**		

2019/ Feb						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	*4*	*5*	*6*	**7**	*8*	9
10	11	*12*	*13*	**14**	*15*	16
17	*18*	*19*	*20*	*21*	*22*	23
24	**25**	*26*	*27*	*28*		

2019/ Mar						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	**4**	*5*	*6*	*7*	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

bold :Research day　*italic* :Alternative date

③ Amount of CO_2 Absorption / Reduction in Eelgrass Location

(1) Carbon Fixation Concept

The amount of part of the body that has died or flowed out from the location of the eelgrass in the coastal area, that is deposited on the seabed as organic matter, which is difficult to decompose is considered as the amount of CO_2 absorption/reduction (= Blue Carbon).

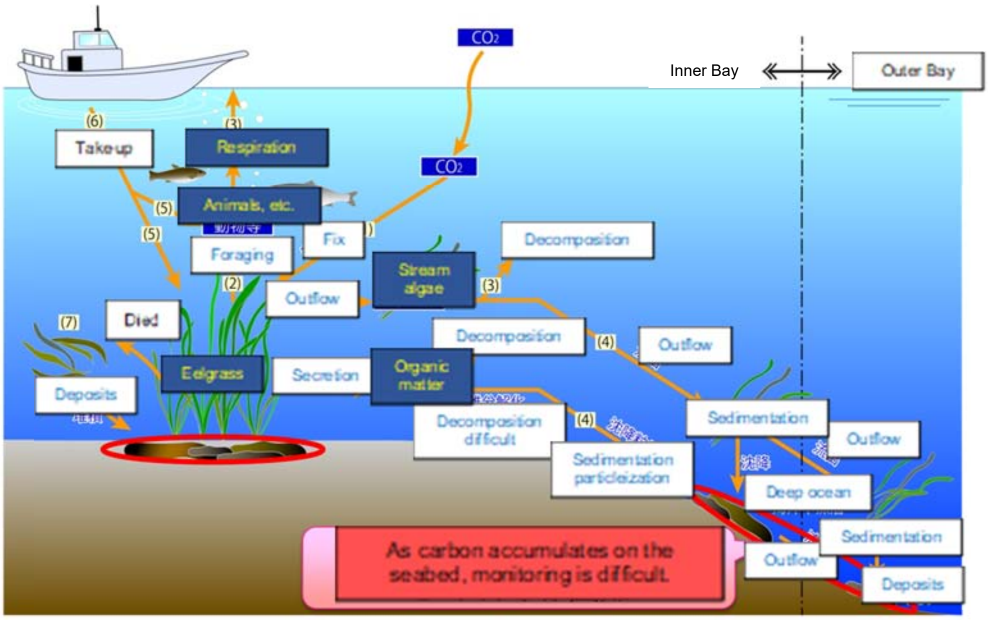

Figure 7: CO_2 Fixation Mechanism in Eelgrass Locations

(2) Calculation Method

Part of the carbon originating from the eelgrass accumulates on the seabed but monitoring the amount of accumulation on the seabed is difficult. Therefore, by multiplying the existing amount of eelgrass in the entire eelgrass location observed at the site by the carbon fixed coefficient set based on the value in the literature, the amount of CO_2 absorption / reduction from the eelgrass location was calculated.

Annual amount ofCO_2 absorption/reduction (kg-CO_2/year)

= the existing amount of eelgrass in the entire eelgrass location (kgWW) x (1-moisture content)

× amount of carbon content in the eelgrass (kg-C/kgDW) × carbon fixed coefficient (/year) × 44/12

= (area(m^2) x wet weight per unit area (kgWW/m^2)) x (1-0.842) × 0.323 × 0.115 × 44/12

(3) Calculation Results of CO2 Absorption/Reduction Amount

When calculating the amount of CO_2 absorption/reduction, to improve the reliability as a basic unit via the accumulation of numbers of samples, the cumulative average value was used. In addition, in 2018, among all 15 quadrats, as only the ascending order from the shore to offshore was included in the dense-growth area, that figure was adopted. As a result, this year, the amount of CO_2 absorption / reduction fell compared to last year (see figure 8).

Figure 9: CO_2 Absorption/Reduction Trial Calculation Result (Eelgrass Location Regeneration/Maintenance)

<table>
<tr><th colspan="3" rowspan="2">Item</th><th rowspan="2">Unit</th><th colspan="4">Research Result</th></tr>
<tr><th>2015 Dense-Growth Area</th><th>2016 Dense-Growth Area</th><th>2017 Dense-Growth Area</th><th>2018 Dense-Growth Area</th></tr>
<tr><td colspan="3">Area</td><td>m2</td><td>51,289</td><td>80,037</td><td>82,448</td><td>19,641</td></tr>
<tr><td rowspan="2">Wet weight per unit area</td><td colspan="2">year concerned</td><td>kgWW/m2</td><td>1.785</td><td>2.717</td><td>4.564</td><td>2.656</td></tr>
<tr><td colspan="2">usage value</td><td>kgWW/m2</td><td colspan="4">3.264</td></tr>
<tr><td colspan="3">Wet weight in eelgrass location dense-growth area</td><td>kgWW</td><td>167,396</td><td>261,224</td><td>269,093</td><td>64,103</td></tr>
<tr><td colspan="3">P/B ratio 1)</td><td>kgWW</td><td colspan="4">4</td></tr>
<tr><td colspan="3">Moisture content 2), 3)</td><td>-</td><td colspan="4">0.842</td></tr>
<tr><td colspan="3">Ratio of carbon content in eelgrass 4)</td><td>kg-C/kgDW</td><td colspan="4">0.323</td></tr>
<tr><td rowspan="5">Fixed carbon coefficient</td><td>Figure in literature in Japan</td><td>Total</td><td>/year</td><td colspan="4">0.115</td></tr>
<tr><td rowspan="4">Figure in literature overseas</td><td>Total</td><td>/year</td><td colspan="4">0.212</td></tr>
<tr><td>In seaweed bed</td><td>/year</td><td colspan="4">0.163</td></tr>
<tr><td>DOC</td><td>/year</td><td colspan="4">0.022</td></tr>
<tr><td>POC</td><td>/year</td><td colspan="4">0.027</td></tr>
<tr><td colspan="3">Carbon dioxide conversion ratio</td><td>-</td><td colspan="4">3.667</td></tr>
<tr><td rowspan="5">Amount of CO2 fixation in the eelgrass location</td><td>Figure in literature in Japan 5)</td><td>Total</td><td>t-CO2/year</td><td>3.602</td><td>5.621</td><td>5.791</td><td>1.379</td></tr>
<tr><td rowspan="4">Figure in literature overseas 6)</td><td>Total</td><td>t-CO2/year</td><td>26.563</td><td>41.451</td><td>42.700</td><td>10.172</td></tr>
<tr><td>In seaweed bed</td><td>t-CO2/year</td><td>20.423</td><td>31.871</td><td>32.831</td><td>7.821</td></tr>
<tr><td>DOC</td><td>t-CO2/year</td><td>2.757</td><td>4.302</td><td>4.431</td><td>1.056</td></tr>
<tr><td>POC</td><td>t-CO2/year</td><td>3.383</td><td>5.279</td><td>5.438</td><td>1.295</td></tr>
</table>

1) Daisuke Muraoka, An Attempt to Determine Carbon Absorption at a Seaweed Area on the Sanriku Coast: Tohoku National Fisheries Research Institute News No. 65, 2-4, 2003.
2) Ministry of the Environment: The 7th Natural Environment Conservation Basic Survey Shallow Sea Ecosystem Survey (Seaweed bed Survey) Report, 2008.
3) Toyoki Kawabata, Kousou Kayata, Masahide Inui, Kazutsugu Hirayama: Estimation of Net Production of Eelgrass Zostera Matarina from Spring to Summer in Yanai Bay, Journal of the Japanese Society of Fisheries Science, 59 (3), 455-459, 1993.
4) Toshinobu Terawaki, Hitoshi Tamaki, Masaki Nishimura: Total Amount of Carbon and Nitrogen in Eelgrass in Hiroshima Bay, Bulletin of the National Fisheries Research Institute, No. 4, 25-32, 2002.
5) Report on the 2011 Project for Outsourcing Promotion Costs for Global Warming Countermeasures, “Assessment of Carbon Sinks in Seaweed Beds and Tidelands and Development of Technology for Improving Absorption Function” ((Germany) National Fisheries Research Institute, Atmosphere and Ocean Research Center at the University of Tokyo, Tohoku Region Biological Field Center at the Hokkaido University, 2012)
6) Export from Seagrass Meadows Contributes to Marine Carbon Sequestration（Carlos M. Duarte and Dorte Krause-Jensen、2017）

(4) Research on Carbon Stocks in Sediments

In Uminokōen Park, the carbon stocks in sediments were measured in order to clarify the quantity of CO2 absorbed and the carbon fixation on the sea bed by Blue Carbon.

1) Concept of carbon stocks in sediments

Part of carbon absorbed or fixed as Blue Carbon is buried in the sediment through the death and sinking of living organisms. The quantity of atmospheric CO2 absorbed as carbon in sediments is calculated by measuring organic carbon (stocks).

2) Research method

The following is the field research method used to study carbon stocks in sediment. Samples (approximately 1 meter cores) were taken at three locations in Uminokōen Park (dense growth areas, sparse growth areas, and non-growth areas).

Table 10 Research on carbon stocks in sediments

Field study	Description
Period	Feb. 14, 2019, 9:00 to 15:00
Place	In Uminokōen Park
Equipment prepared	7 acrylic pipes (including spares), simple GPS, several kinds of hammers, staff, diving gear
Required manpower	4 (1 diver, 2 workers, 1 safety person on dry land)
Description of research	・ At the site, three locations—dense growth, sparse growth, and non-growth areas—were selected (simple GPS). ・ At each selected location, the diver did underwater work, which was using the acrylic pipes to sample cores of about 1 m (minimum 90 cm). [Acrylic pipes: diameter 7.6 cm (internal diameter 7 cm, wall thickness 0.3 cm), length 1.5 m] ・ The ends of the acrylic pipes used for sampling were closed with rubber stoppers, and to prevent disturbance of the samples, the pipes were inserted perpendicularly then immediately taken to the laboratory.

Figure 8 View of the research on carbon stocks in sediments

3 Conference on Urban Blue Carbon Report

(1) Overview of the experts round-table conference

The following is an overview of the experts round-table on urban Blue Carbon

Table 11 Participant affiliation table

Conference	Date and time	Place	Topics discussed
First	July 2 (Mon.), 2018 15:00 to 16: 00	Yokohama Media and Communications Center	・Yokohama Blue Carbon Initiatives ・Initiatives in FY2018 ・Others
Second	Nov. 13 (Tues.), 2018 10:00 to 11:30		

Figure 9 View of the Round-Table Conference on Urban Blue Carbon (Left: 1st, Right: 2nd)

Table 12: Participant Affiliation

Participant affiliation
National Research and Development Agency, National Institute of Maritime, Port and Aviation Technology Port and Airport Research Institute: PARI
Tokyo University of Marine Science and Technology
Yokohama National University
National Research Institute of Fisheries Science, Japan Fisheries Research and Education Agency
National Institute for Environmental Studies
Ministry of the Environment Global Environment Bureau
Ministry of Land, Infrastructure, Transport and Tourism. Kanto Regional Development Bureau
Yokohama City Fisheries Cooperative Association
Kanazawa Rinkai Service Co., Ltd.
Yokohama Hakkeijima Co., Ltd.
ICLEI Japan
City of Yokohama, Environmental Planning Bureau
City of Yokohama, Port and Harbor Bureau

City of Yokohama, Climate Change Policy Headquarters <Secretariat>

（2）Opinions at Round-Table Conference

The activities at the first round-table conference were mainly the introduction of initiatives and exchange of information. At the second round-table conference, interim information on the results of the field research was reported, and the participants gave their opinions on the conduct of the research, summarization policies, and information announcement method. Table 13 shows noted points and corresponding policies.

Figure 13: 2nd Round-Table Conference on Urban Blue Carbon - points to be noted

Item	Noted Points	Corresponding Policy
Data Organization	For research points (5) and (6), it is better to extract only at the period of low salinity.	To understand the effects of inflowing rivers, the noted points will be considered in the future.
	It is difficult to examine water quality data that does not include information about tides. As with the water sampling time, this is important information so it should be combined and arranged with other information and then consideration given.	To understand the CO_2 absorption from water sampling twice a day, only data at the time of a falling tide is used (see Figure 5).
	Since the timing and amount of rainfall in the catchment basin are important, data from not only one AMeDAS Observatory location, but from several locations should be used.	In addition to the AMeDAS Observatories, rainfall data from Kanazawa Fire Department will be used.
	For management of urban sea areas, it is necessary to arrange the location of discharge pipes for sewers and the extent of maintenance of the combined flow system and separated flow system.	The noted points will be organized and then considered.
	If research targets are expanded in the future, setting the control zone is important. (If data are collected offshore as much as possible at the time of high tide, they can be used as data with little ecological impact)	We will provide data to the Port and Airport Research Institute with whom we are cooperating, and we will consider how to evaluate CO_2 absorption going forward.
Considerations	Since the water in the sea area is flowing, even if the partial pressure is low at a particular point, it is not known where it is being absorbed.	
	To verify what impacts CO_2 absorption through a survey of seawater CO_2 concentration, it may be necessary to further organize related information.	
Other	As an administrative authority, only Yokohama City is engaged in research on Blue Carbon, so establishing a survey method for measuring seawater CO_2 concentration in such a way that it can be utilized by other local governments, and to disseminate it internationally is very important.	We will cooperate with stakeholders concerned with the sea and disseminate information. Urban blue carbon will be factored into the urban GHG inventory such as CDP and GPC in the future, and we aim to incorporate GHG reduction via urban blue carbon into urban administrative policies.
	As all local government budgets are tight, it is important to show how to provide incentives to the private sector and the local area.	

4. Future prospects

In Yokohama City, in order to accumulate data concerning quantity of CO_2 absorbed and fixed on the sea bed by "Blue Carbon focused on urban characteristics" and to verify a method of numerically expressing these data as quantity of urban CO_2 reduction in order to build a Yokohama Model, the city has, in cooperation with research organizations, conducted field water quality research to clarify the behavior of CO_2 absorption in urban sea areas at eelgrass locations and at kelp and wakame cultivation beds in Kanazawa Bay. The results have shown a general tendency for CO_2 to be absorbed in Kanazawa Bay.

Furthermore, carbon stocks in sediments were researched in order to clarify carbon fixation in the bottom under eelgrass locations, and the materials obtained have been provided to the Port and Airport Research Institute. The Port and Airport Research Institute is expected to continue this research on water quality conducted for this project after October 2018, to measure quantities of alga body migrating out of seaweed cultivation locations and natural seaweed beds in Kanazawa Bay, study carbon fixation in seaweed cultivation locations, study the distribution of natural seaweed locations, and to apply the results of these studies and this project to verify the water quality simulation model in the coming year.

This water quality simulation is now in the first year of a three-year planned project, and later after the physical field has been reproduced, an ecosystem model will be solved. At the stage when verification of the model has been completed, predictive calculations will be done for a case where the seaweed beds have been increased and for a case where the quantity of inflowing N and P have been controlled, and the anticipated degree of CO_2 fixing effect which these measures cause will be predicted and evaluated. It is assumed that at this stage it will be possible to also study measures such as providing an ocean environment where the CO_2 absorption capacity is higher based on urban characteristics.

In the next fiscal year, the quantity of CO_2 absorbed and fixed by the growth of seaweeds (cultivated kelp and wakame) will be calculated, the offset credit that will be their object under the Yokohama Blue Carbon Offset System that is now being promoted will be verified and published, and support will be given to initiatives to improve the ocean environment using the profits of the sale of credits.

The experts round-table conference will report initiatives that have been taken under the Yokohama Blue Carbon Project to experts and other concerned persons in order to continue the project, exchange views concerning progress of the project beginning next year, and at the third experts round-table conference scheduled for June 2019, reports on overviews of various research conducted since the second conference will be given along with reports on the progress of the simulation.

The following figure is an image of future progress which is now at phase 1. In the future, the Yokohama Model will be built, and in order for it to have ripple effects on developments and policies of other cities, the research and studies will advance to Phase 2.

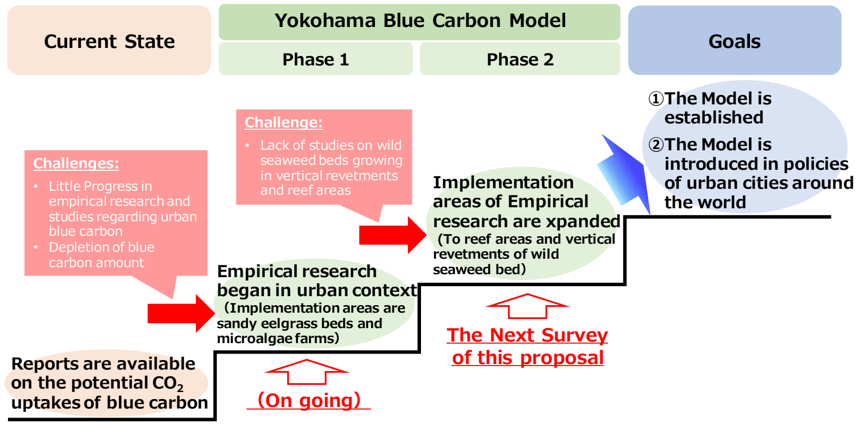

Figure 10 Future Prospects