Horikawa Sen-nin Chosatai 2010

(Horikawa River Thousand Citizen Survey Network 2010)

Summary Meeting for the 11th Stage

(September 22nd 2012)

Horikawa Sen-nin Chosatai 2010 secretariat

Horikawa River Pilot Project

-Transmission of Raw Water from the Kiso River (TRWKR) –

Surveys during TRWKR period : April 2007 ～ March 2010

Surveys after the stop of TRWKR : April 2010～ March 2012

■ The formation of Horikawa Sen-nin Chosatai (HSC)

(April 22nd 2007)

1) Fixed Point Observation Groups
2) Free Survey Groups
3) Horikawa Cheering Groups

The survey with a view point and a sense of citizens

To verify the clarification effects of TRWKR

■ It was confirmed that the water quality tended to improve during TRWKR between Sanage Bridge and Matsushige Bridge.

■ Network of citizens who make a wish for clarification and restoration of the Horikawa River was grown.

■ Citizens' awareness of cleaning of the river was developed

Horikawa River Pilot Project

-Transmission of Raw Water from the Kiso River (TRWKR) –

Surveys during TRWKR period : April 2007 ～ March 2010

Surveys after the stop of TRWKR : April 2010～ March 2012

■ Conclusions of Summary Meeting for the 10th Stage

(1) More surveys should be implemented.

•Continuity of investigation, Clarification of the situation of the river, identification of cause of pollution in the river, are needed.

•We will make a improvement plan and take action to the pollution.

•After that, citizens and public administration will do what is possible to clean the river.

(2) There are many things that citizens can.

•We will expand the circle of partners who love the Horikawa River and hope the TRWKR.

•We will deepen exchanges with people living in the basin of the Kiso, Nagara, and Ibi River.

•We will check the effect of pollution removal from domestic wastewater and implement it in each house.

Number of Participnants of Horikawa Sen-nin Chosatai 2010

Horikawa Sen-nin Chosatai started accepting participation on March 26th ,2007

	Start Apr.22th 2007	Now Feb.20th 2012
Fixed Point Observation Groups	55 groups 497 persons	91 groups 906 persons
Free Survey Groups	22 groups 234 persons	40 groups 650 persons
Horikawa Cheering Groups	88 groups 1,531 persons	2,457 groups 44,029 persons
Total	165 groups 2,262 persons	2,588 groups 45,585 persons

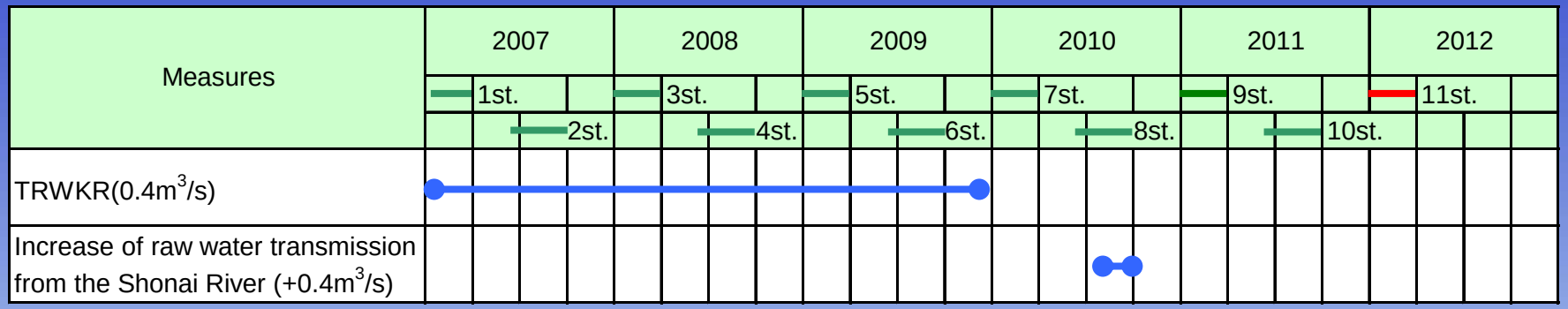
Survey period and Number of reports

Survey Period (With TRWKR)		Number of Reports
1st stage	Spring ~ early summer / Apr.22nd ~Jun.30th 2007	258
Interval	Jul.1st ~Sep.7th 2007	134
2nd stage	Autumn ~ early winter / Sep.8th ~Dec.16th 2007	383
Interval	Dec.17th 2007~Mar.31st 2008	103
3rd stage	Spring ~ early summer / Apr.1st ~Jun.30th 2008	245
Interval	Jul.1st ~Sep.27th 2008	64
4th stage	Autumn ~ early winter / Sep.28th ~Dec.16th 2008	152
Interval	Dec.17th 2008~Mar.31st 2009	100
5th stage	Spring ~ early summer / Apr.1st ~Jun.30th 2009	145
Interval	Jul.1st ~Sep.26th 2009	54
6th stage	Autumn ~ early winter / Sep.27th ~Dec.16th 2009	120
Interval	Dec.17th 2009 ~ Mar.31st 2010	81

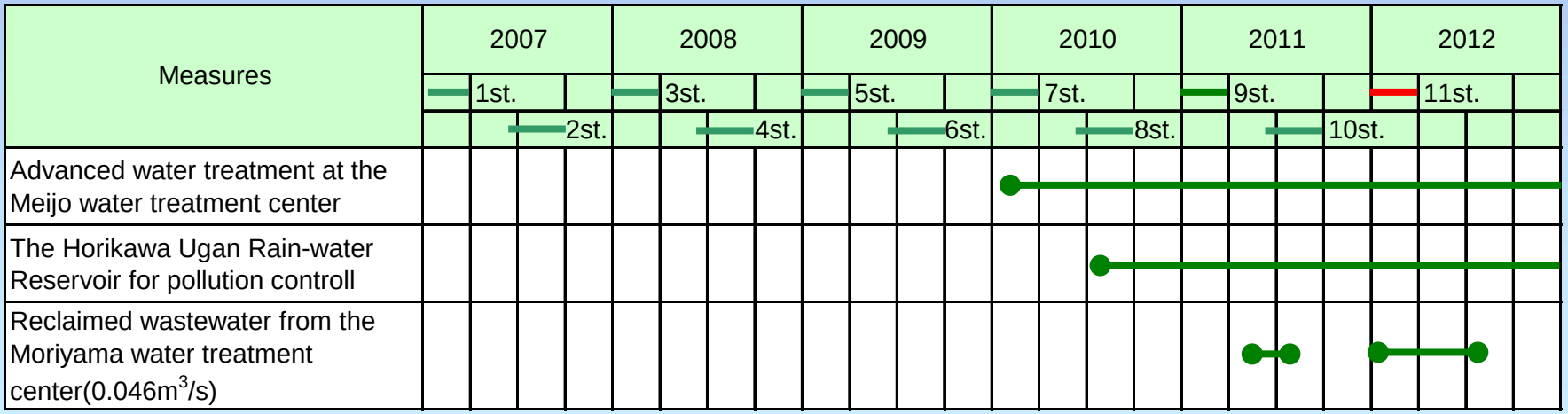
Survey period and Number of reports

Survey Period (Without TRWKR)		Number of Reports
7th stage	spring～early summer / Apr.1st ～Jun.30th 2010	111
Interval	Jul.1st ～ Sep.11th 2010	44
8th stage	Autumn～early winter / Sep.12th ～Dec.17th 2010	104
Interval	Dec.17th 2010～Mar.31st 2011	72
9th stage	spring～early summer / Apr.1st ～Jun.30th 2011	112
Interval	Jul.1st ～Sep.10th 2011	42
10th stage	Autumn～early winter / Sep.11th～Dec.16th 2011	133
Interval	Dec.17th 2011～Mar.31st 2012	77
11th stage	spring～early summer / Apr.1st ～Jun.30th 2012	148
	Total	2,682

The main measures of the pilot project



The main measures implemented by City of Nagoya

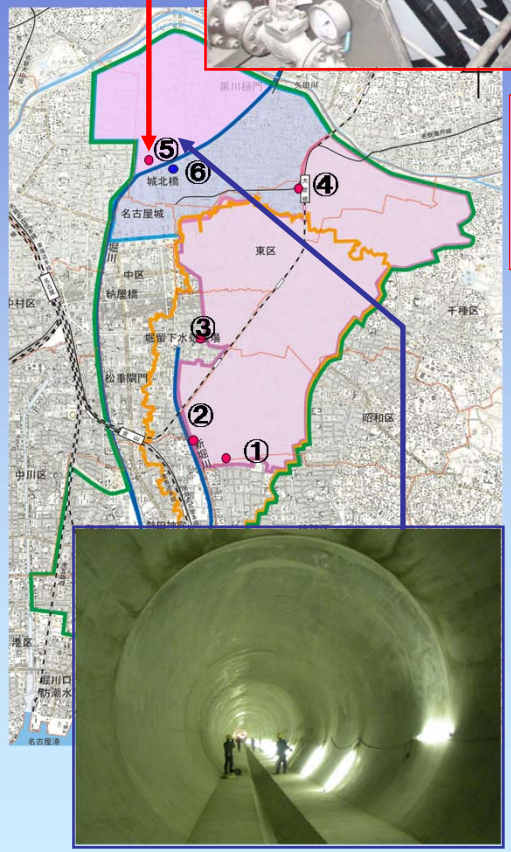


The facilities after the stop of TRWKR

■ Improvement of the quality of treated water

The additional filtration of treated water at the Meijo Water Treatment Center leads to the improvement of quality of the water sluiced into Horikawa River.

Meijo Water Treatment Center (Advanced water treatment)
Solution: conventional activated sludge process ＋ rapid filtration
Launch (rapid filtration): May. 2010



■ Improvement of combined sewer system

By capturing and storing first flush with high-pollution load temporarily, the frequency of overflow from the sewer outlet can be reduced.

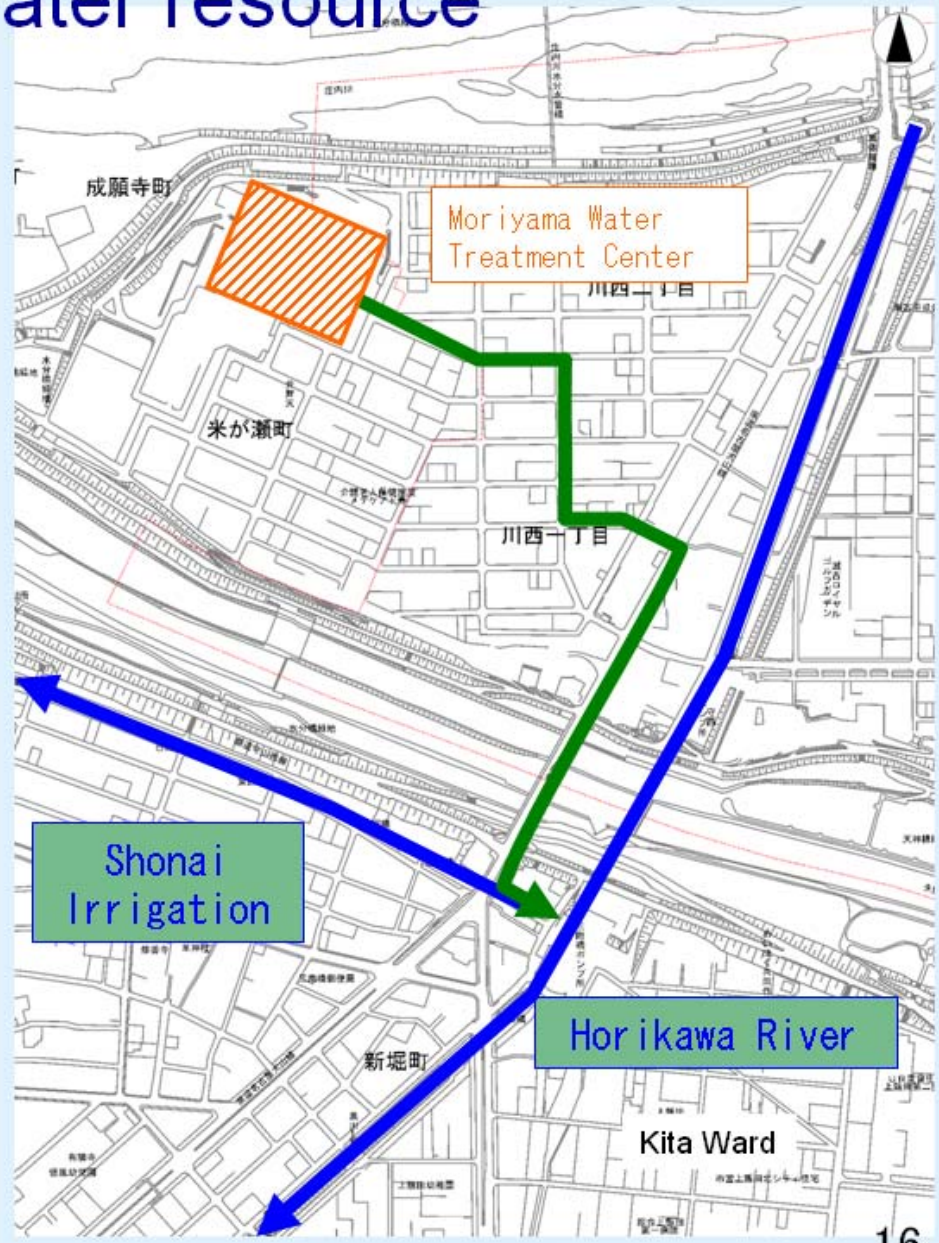
Horikawa Ugan Rain-water Reservoir for pollution control
Volume: 13,000m3
Coverage Area: 633ha
Launch: Sep. 2010

Reserve additional water resource

◆Use of reclaimed wastewater

Conducting reclaimed wastewater that was membrane filtered in Moriyama Water Treatment Center into Horikawa River up to 4000m^3/day

Reclaimed wastewater was conducted during irrigation season(Apr-Oct)

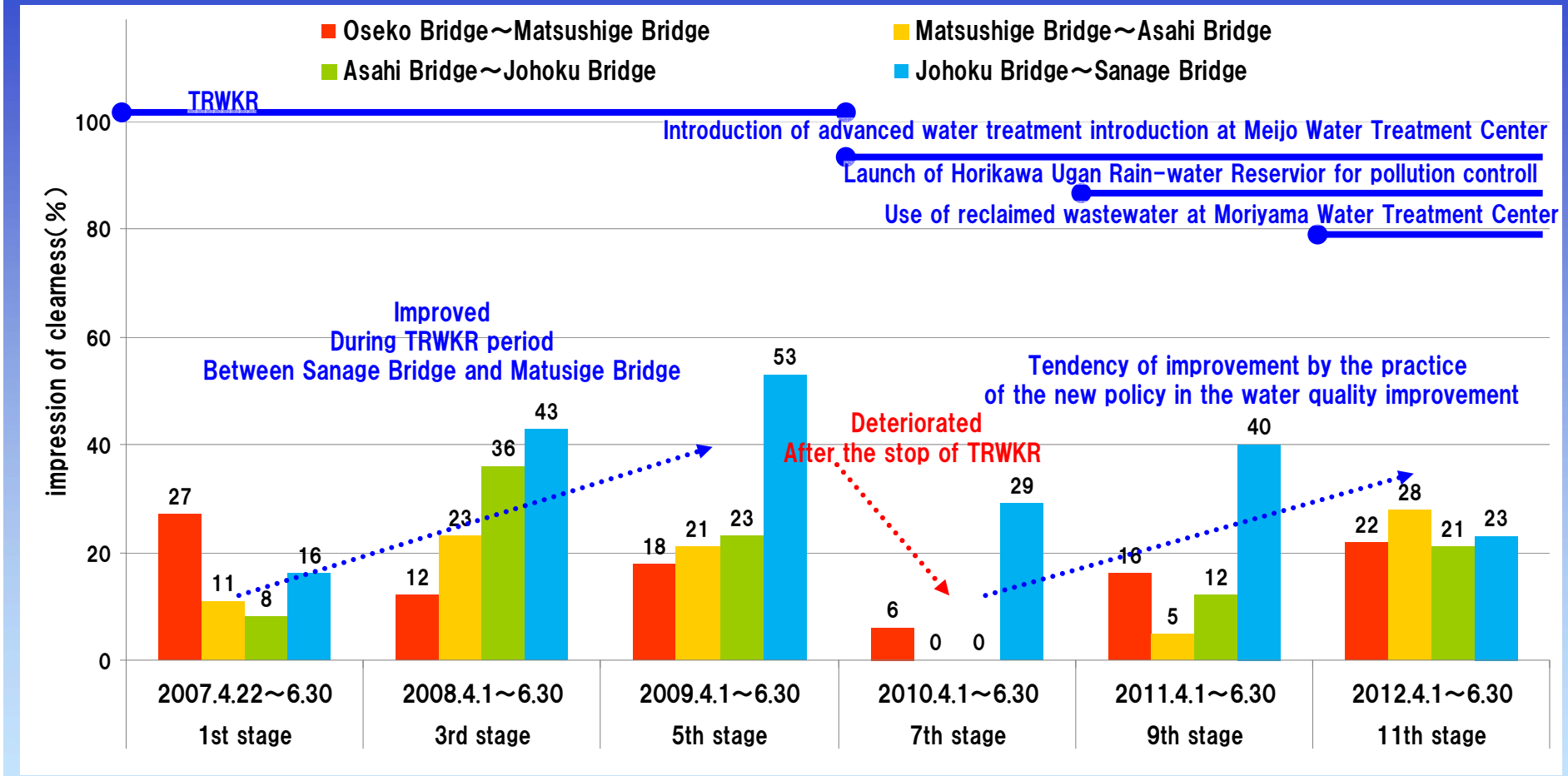


Impression of clearness･･･Spring～Early Summer

Proportion between “Clear” and “Neither”

Except the section with a small data Minatoshin Bridge ～ Oseko Bridge ,Sanage Bridge ～ Sakae Bridge

The 1･3･5 Stage : TRWKR
No rain on the day and the previous day
The 7･9･11 Stage: No TRWKR
No rain on the day and the previous day



■ After the stop of TRWKR, how did the impression of clearness change (spring～early summer)?
→In 7th stage after the stop of TRWKR, impression (“clean” or “not applicable either”) was deteriorated. But afterward we have seen is the tendency of improvement. This is considered to be an effect of the new water quality improvement measures.

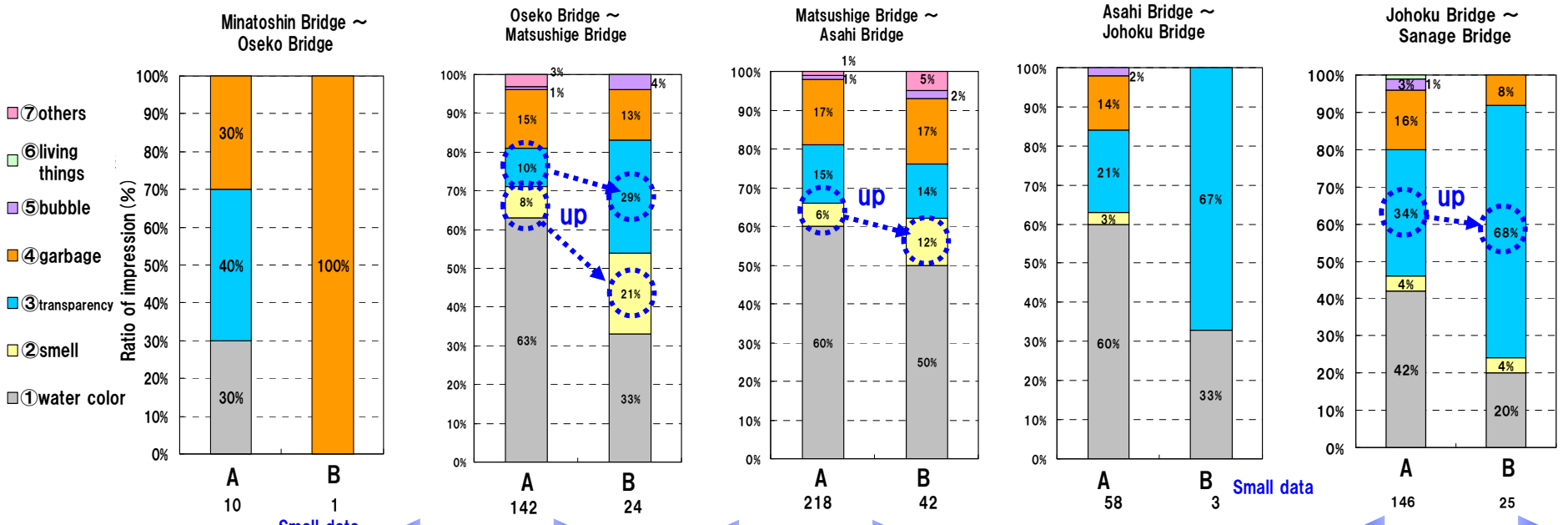
Rain or no rain on the previous day・・・ Spring～Early Summer
Impression of clearness Sanage Bridge～ Minatoshin Bridge

The 3・5・7・9・11stage TRWKR and No TRWKR No rain on the day and rain on the previous day

3rd・5th stage ：TRWKR
No rain on the day and the previous day
7th・9th・11th stage: ：No TRWKR
No rain on the day and the previous day

A. No rain on the day and the previous day

B. No rain on the day and Rain on the previous day



②and③ is increased when it rains

② is increased when it rains

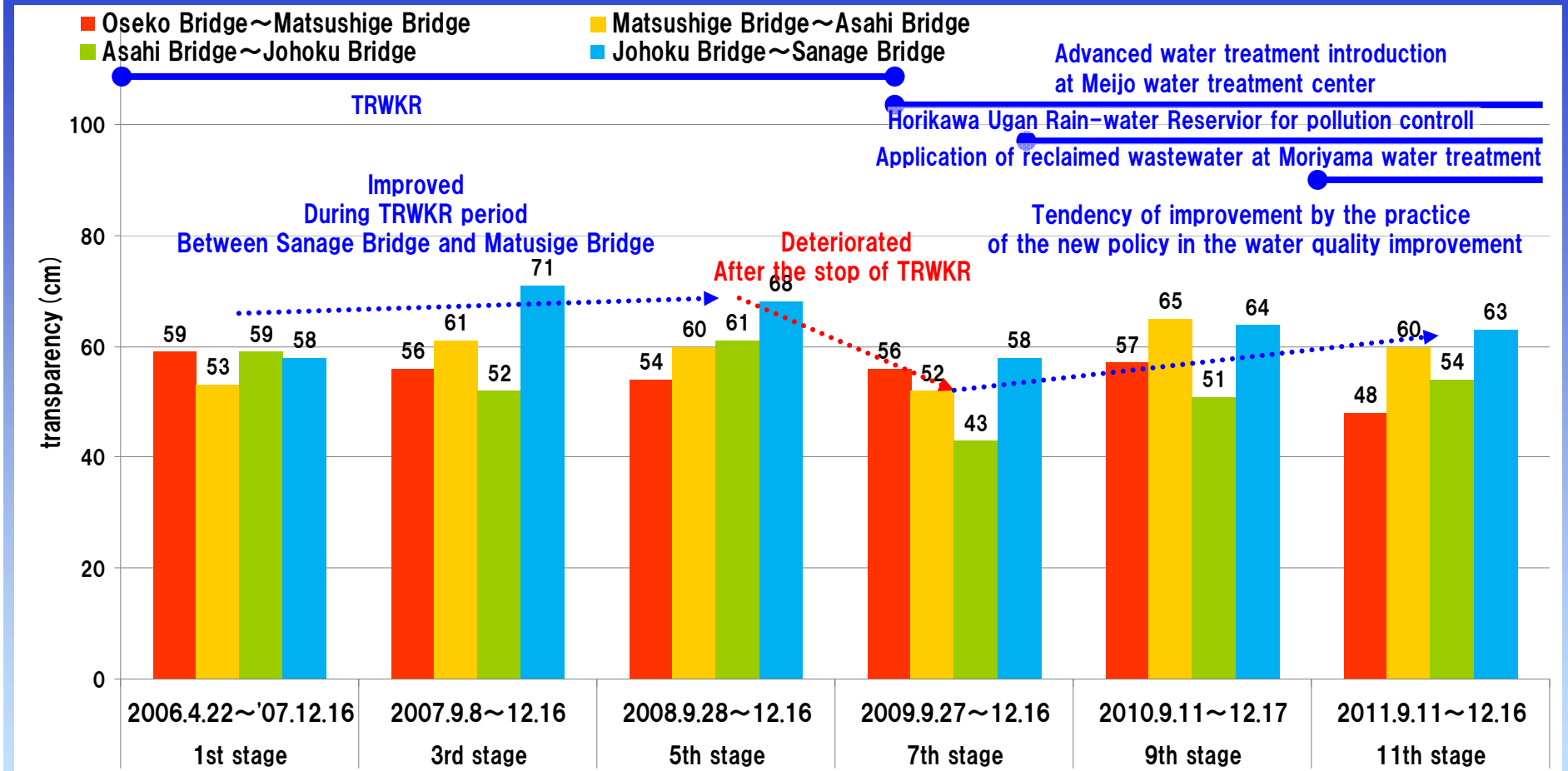
③ is increased when it rains

■ After the rain on the previous day, how did the change impression of clearness (spring～early summer)?
→ ② is increased between Sanage Bridge and Johoku Bridge. ② is increased between Asahi Bridge and Matsusige Bridge. The evaluation of clean and smell is increased between Matsusige Bridge and Oseko Bridge.

The change of transparency・・・ Spring～Early Summer

Except the section with a small data Minatoshin Bridge ～ Oseko Bridge ,Sanage Bridge ～ Sakae Bridge

The 1・3・5 Stage : TRWKR
No rain on the day and the previous day
The 7・9・11 Stage: No TRWKR
No rain on the day and the previous day

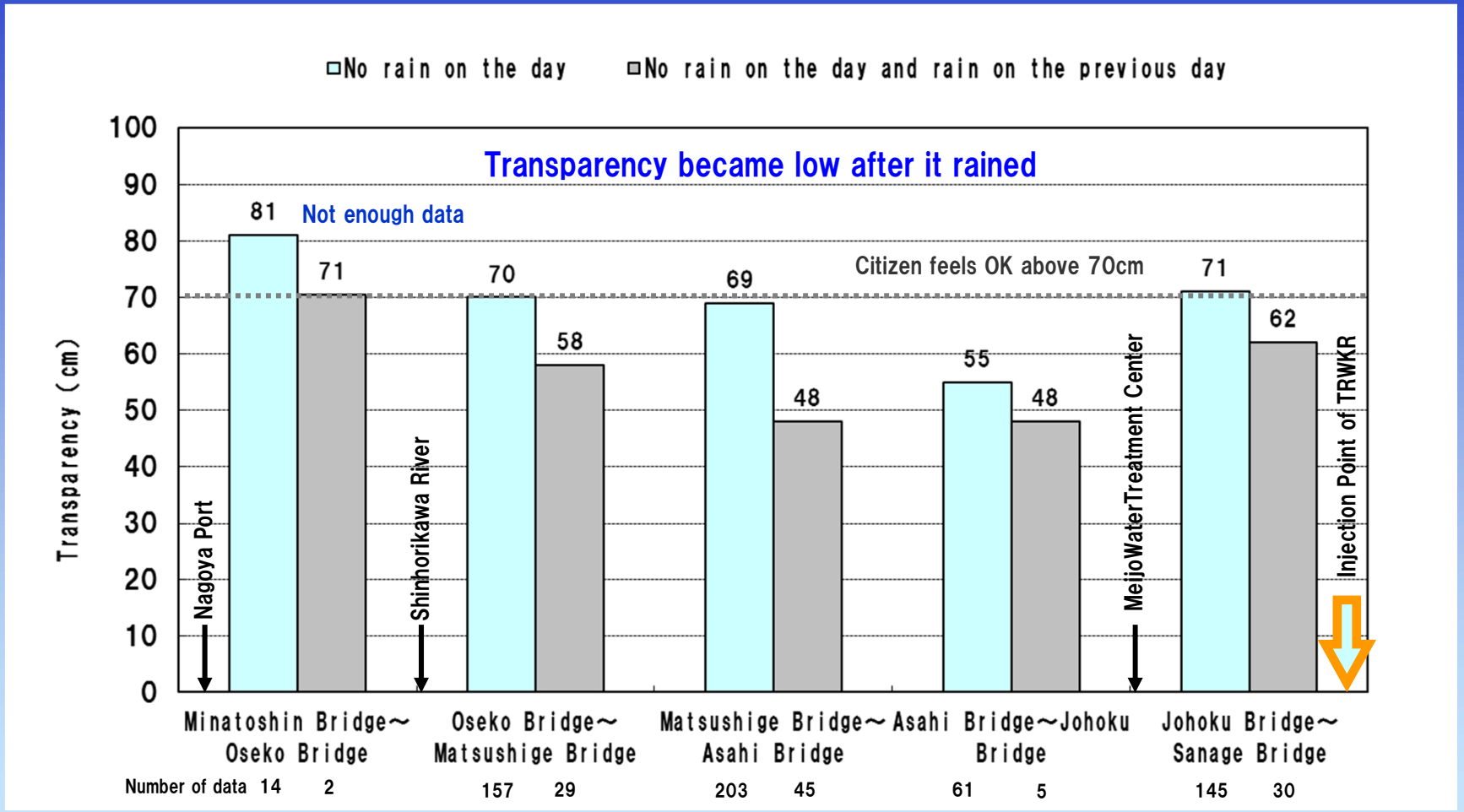


■ After the stop of TRWKR How did the change impression of clearness (spring～early summer)?
→In 7th stage after the stop of TRWKR, transparency was deteriorated. But afterward we have seen the transparency of improvement. This is considered to be an effect of the new water quality improvement measures.

The average of transparency if it rained on the previous day

Sanage Bridge ～ Minatoshin Bridge

・1st・3rd・5th・7th・9th・11th stage including all data （ TRWKR and No TRWKR ） ・No rain on the day



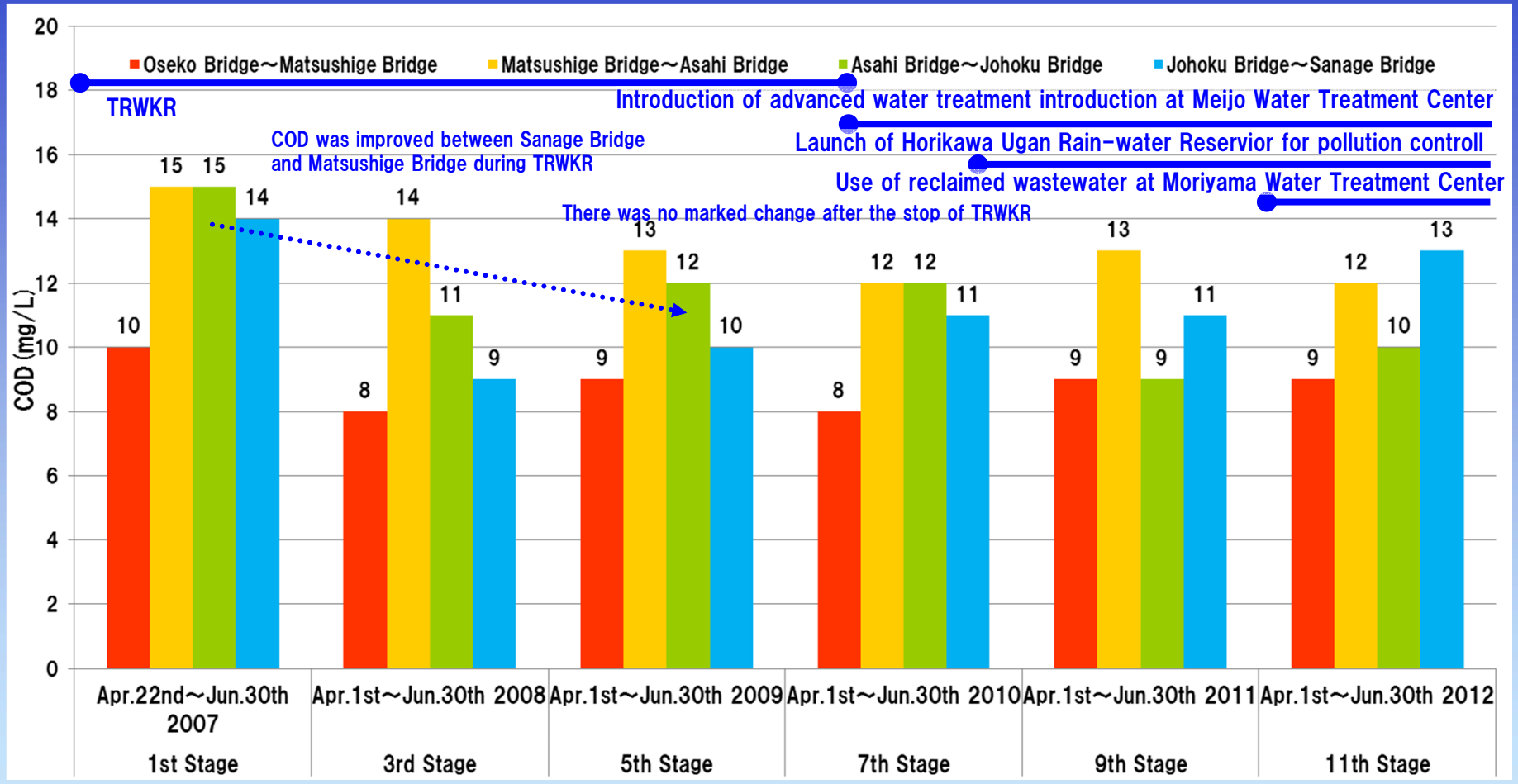
Note）The value of 100cm or more was treated as 100cm

■ How did transparency （spring～early summer） change if it rained on the previous day ?
→Transparency became low after it rained.
Especially, the transparency became lower between Asahi Bridge and Minatoshin Bridge .

Change in COD･･･spring～early summer

1st･3rd･5th stage : TRWKR
No rain on the day and the previous day
7th･9th･11th stage: No TRWKR
No rain on the day and the previous day

Note) Rule out the data of “Minatoshin Bridge ～Oseko Bridge” and the data of “Sanage Bridge ～Sakae Bridge” for not enough data.

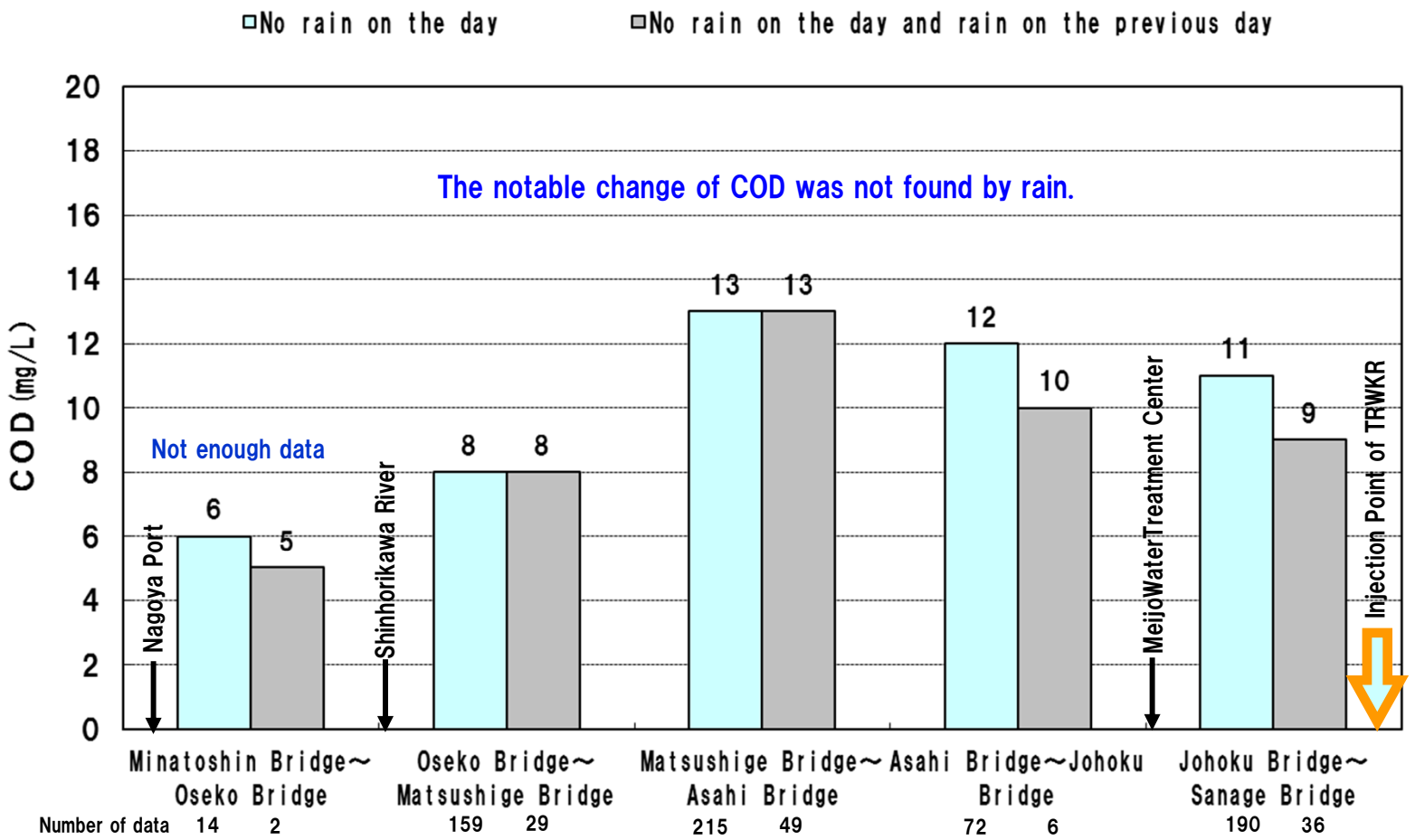


■ How did COD (spring～early summer) change after the stop of TRWKR ?
→There was no marked change in COD after the stop of TRWKR

The average of COD after rain on the previous day

・・・spring～early summer　Sanage Bridge～Minatoshin Bridge

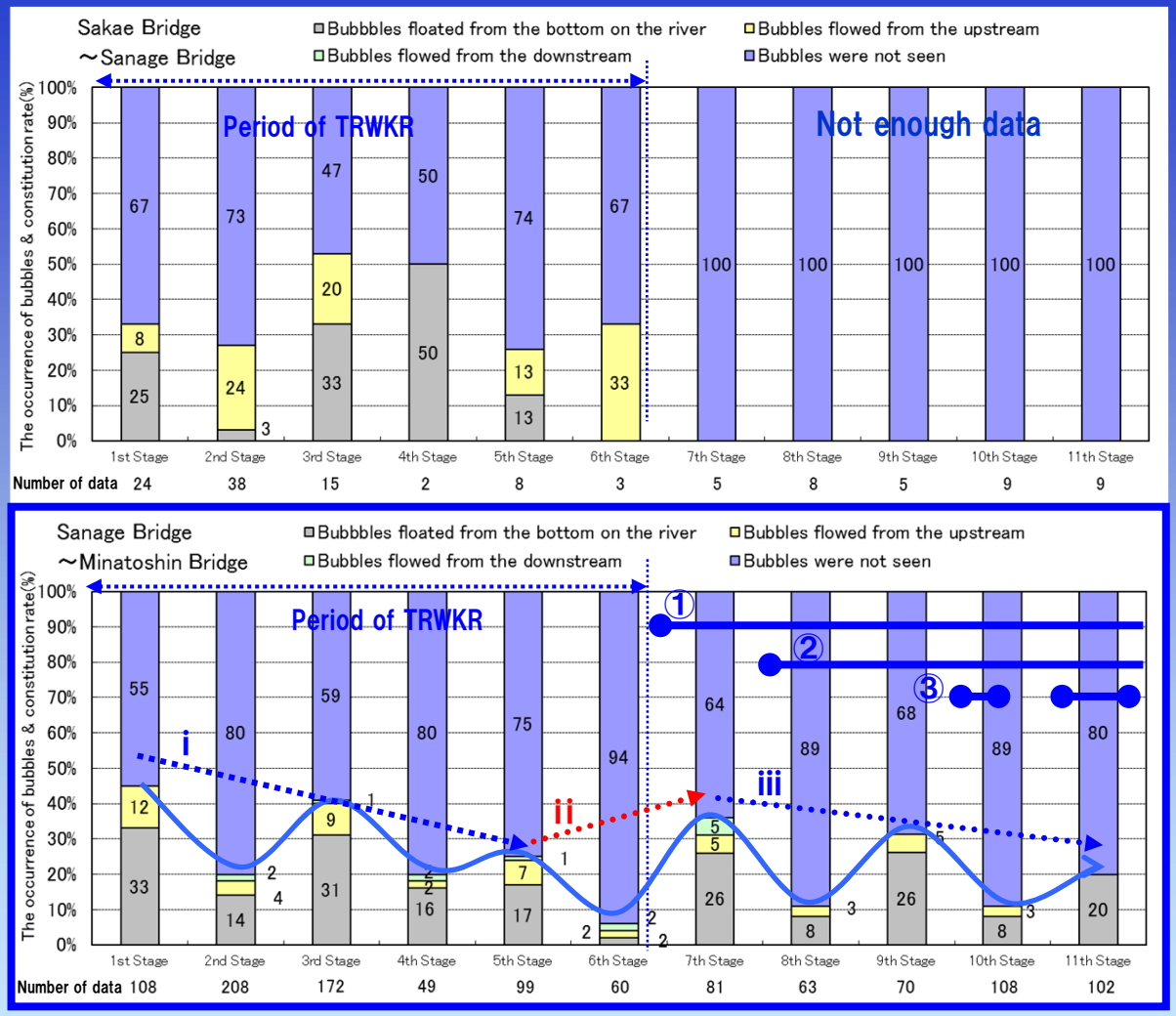
・1st・3rd・5th・7th・9th・11th stage including all data（TRWKR and No TRWKR）　・No rain on the day



■ How did COD（spring～early summer）change when it rained on the previous day？

→The notable change of COD was not found by rain.

The occurrence of bubbles



・1st-6th stage : TRWKR
No rain on the day and the previous day
・7th-11th stage : No TRWKR
No rain on the day and the previous day

① Introduction of advanced water treatment at the Meijo water treatment center.

② Launch of the Horikawa Ugan Rain-water Reservoir for pollution control.

③ Use of reclaimed waste water at the Moriyama water treatment center.

i) Decreasing the frequency of the occurrence of bubbles.

ii) Increased after the stop of TRWKR.

iii) The bubbles tended to decrease for the new implemented water quality improvement measure .

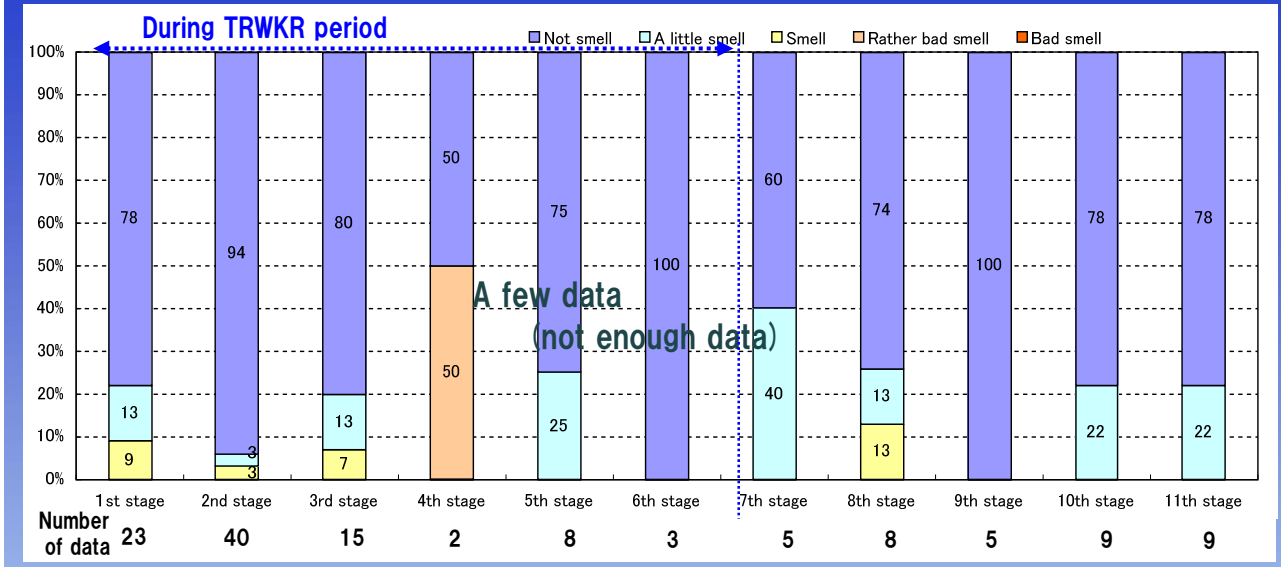
■ How did the bubbles change ?

→The frequency of occurrence of bubbles “spring～early summer” was higher than “autumn～early winter”.
And the frequency of occurrence of bubbles decreased during TRWKR.
The bubbles increased after the stop of TRWKR (7th stage) . But after that, the bubbles tended to decrease.
This is considered to be an effect by the new implemented water quality improvement measure.

5. Smell

1st ～ 6th stage :TRWKR
No rain in the day and the previous day
7th ～ 11th stage:No TRWKR
No rain in the day and the previous day

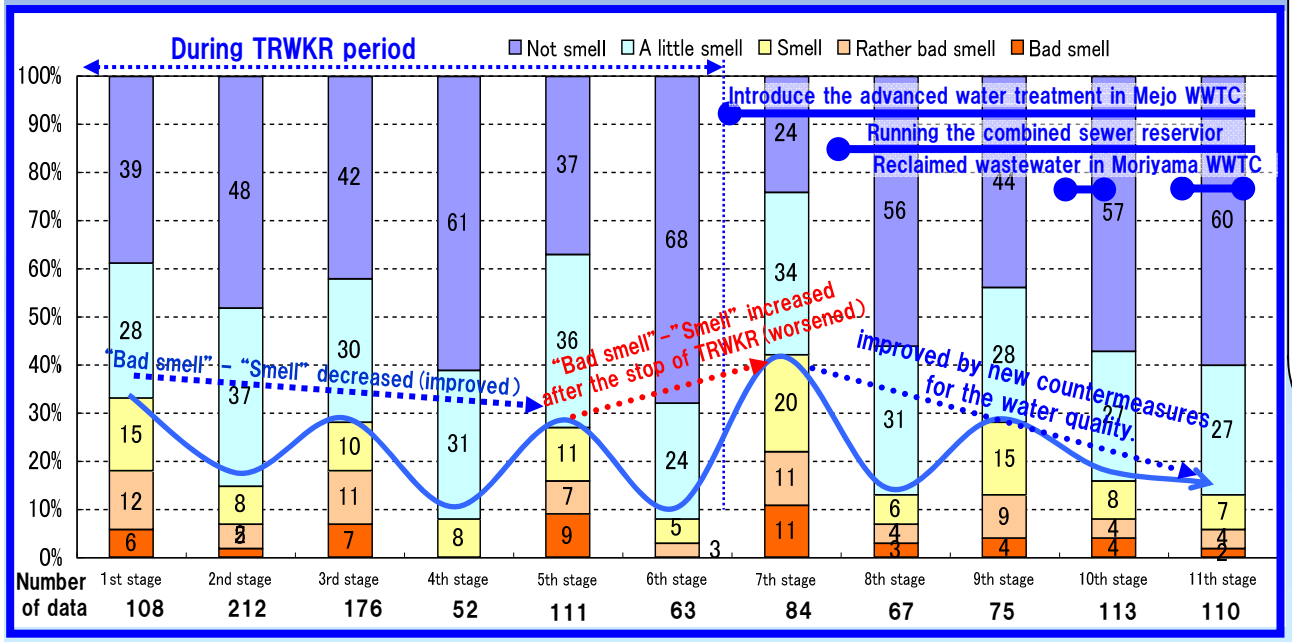
Sakae bridge ～ Sanage bridge



(Reference) Offensive Odor Control Law
Regulatory standards at the boundary of factories or workplaces is defined as the density of specific malodorous substance corresponding to the intensity of 2.5～3.5 in "Indicator Method of 6-Level-Odor-Intensity".

intensity	smell degree
0	no smell
1	smelly enough to sense
2	smelly enough to find out what kind of smell
3	smell easily to realize
4	bad smell
5	Extremely strong smell

Sanage bridge ～ Minatoshin bridge



■ How did the smell change?

There were more "Bad smell" and "Rather bad smell" in spring-early summer season than autum-early winter season.

"Bad smell" and "Rather bad smell" decreased in the during TRWKR period.

"Bad smell" and "Rather bad smell" decreased after the stop of TRWKR (7th stage). But after that, smell decreased (became better). This is considered to be the effect of the newly implemented water-quality-improvement measures.

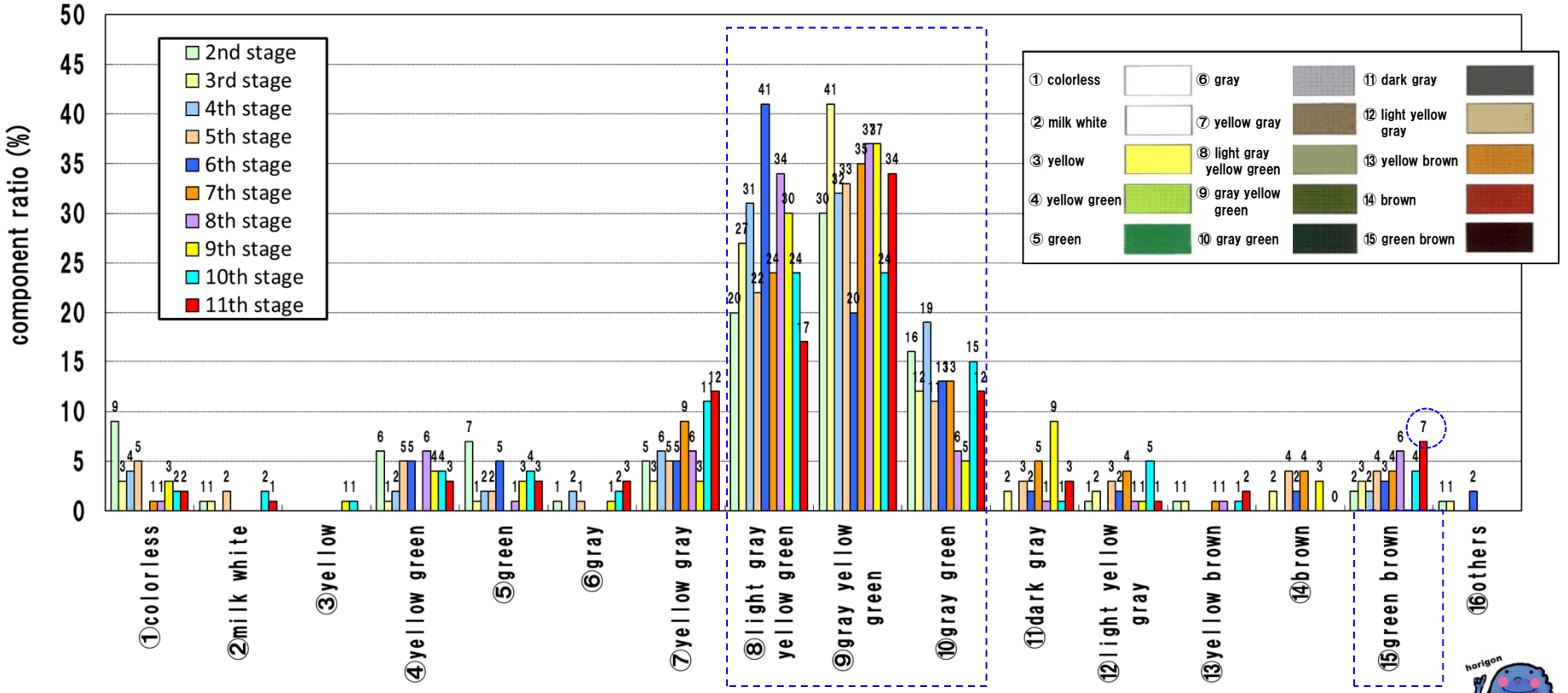
The component ratio of the Color

between Sanage bridge and Minatoshin bridge

1st～6th stage :TRWKR
No rain in the day and the previous day
7th～11th stage:No TRWKR
No rain in the day and the previous day

The “color” was added to the survey list from the 2nd stage.

High Frequency: ⑧light gray yellow green, ⑨gray yellow green, ⑩gray green



■Which color was seen frequently?

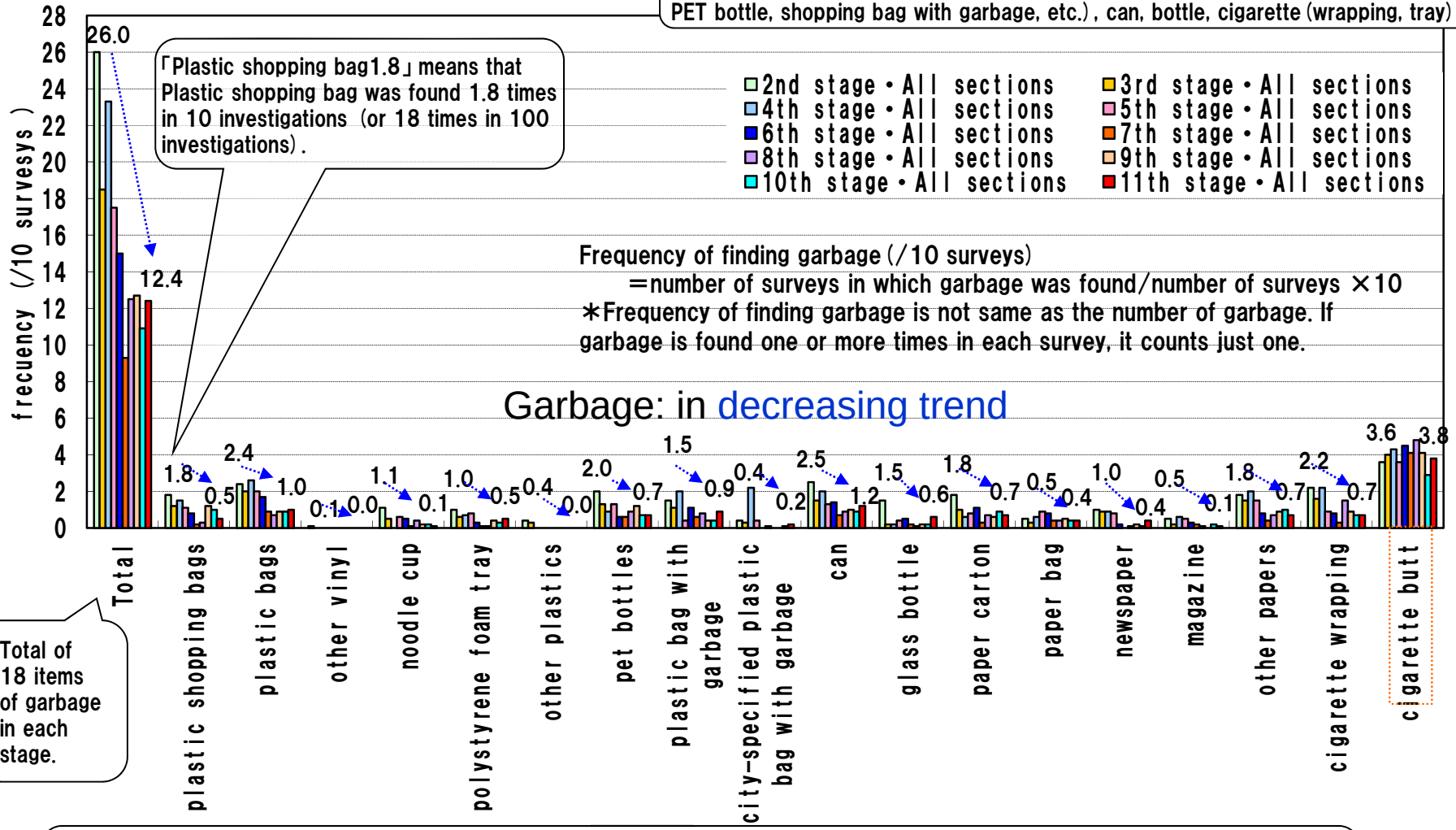
→⑧light gray yellow green, ⑨gray yellow green, and ⑩gray green appeared frequently. The ratio of ⑮green brown slightly increased in the 11th stage. It was considered because there were many phytoplanktons in the river.

7. Garbage

Garbage on the road
Change of frequency that artificial garbage were found
(2nd-11th stage, All sections))

From 2nd to 6th stage : TRWKR
No rain on the day and the previous day
From 7th to 11th stage:No TRWKR
No rain on the day and the previous day

■What is artificial garbage?:
Plastics (shopping bag, vinyl bag, noodle cup, polystyrene foamed tray, PET bottle, shopping bag with garbage, etc.), can, bottle, cigarette (wrapping, tray)



Total of 18 items of garbage in each stage.

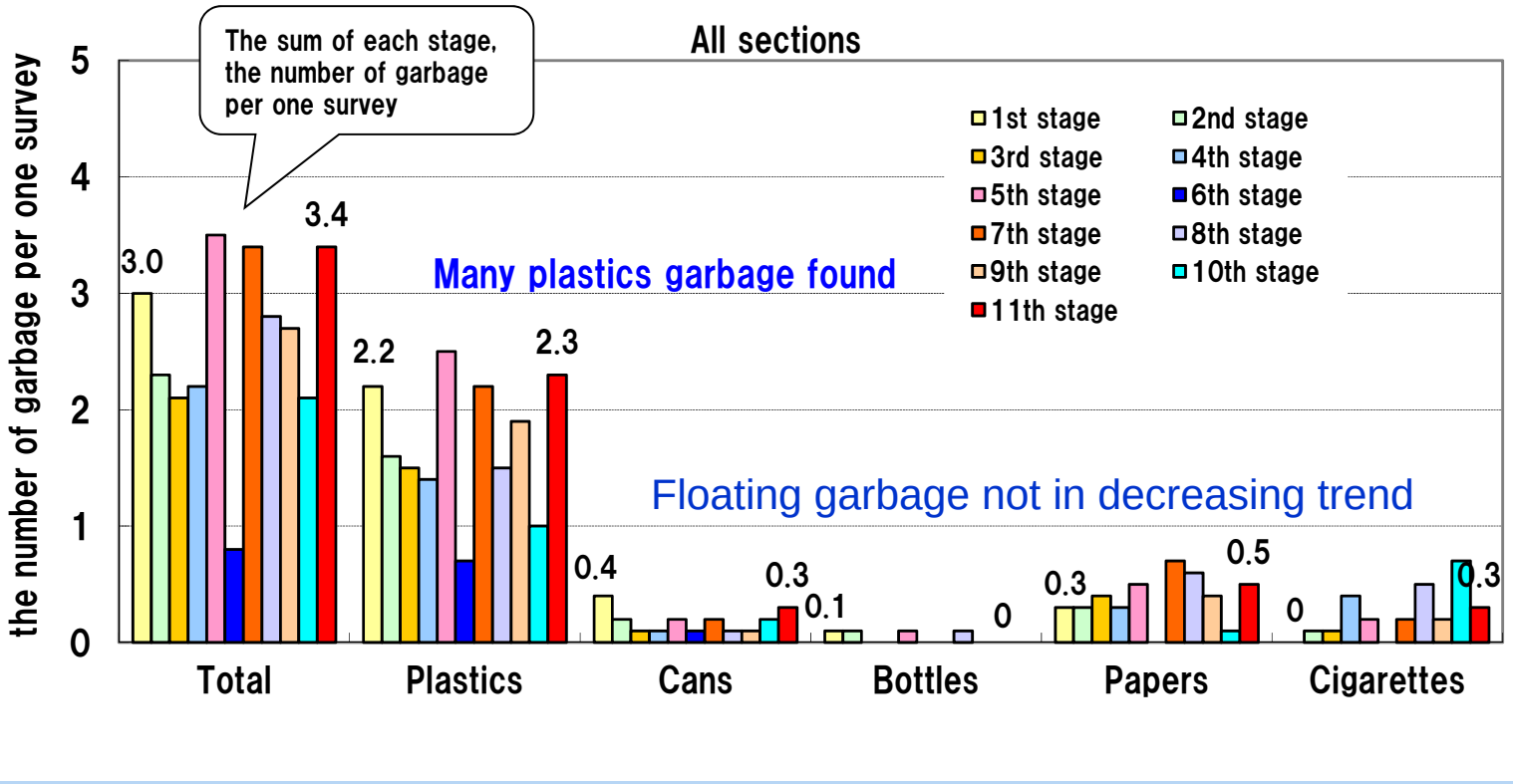
■How has the frequency of finding garbage on the road changed?
Garbage has been in decreasing trend. Growing of cleaning activities and charge for the plastic shopping bags etc. may be causes of this trend. The most frequent item to be found is "cigarette butt".

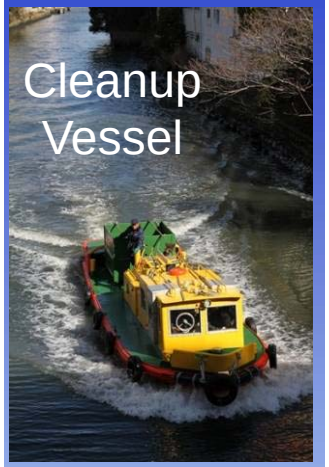
Floating substance
Change in floating garbage

From 1st to 6th stage : TRWKR
No rain on the day and the previous day

From 7th to 11th stage:No TRWKR
No rain on the day and the previous day

■What is artificial garbage？:
Plastics (shopping bag, vinyl bag, noodle cup, polystyrene foamed tray, PET bottle, shopping bag with garbage, etc.), can, bottle, cigarette (wrapping, tray)





Survey numbers
1st Stage:145
2nd Stage:255
3rd Stage:191
4th Stage: 54
5th Stage:119
6th Stage: 66
7th Stage: 90
8th Stage: 75
9th Stage: 81
10th Stage:122
11th Stage: 122

Note: the number of garbage per one survey= the number of each artificial garbage found in all surveys /the number of surveys
＊the number of garbage is the number of garbage found through all surveys
"if some kind of garbage was found "many (= ＊＊＊)" in some survey, it counts "10", the maximum number in one survey substituted for the number of "many".

■How has the floating garbage (artificial garbage) changed?
→Floating garbage have not decreased although garbage on the road is in decreasing trend.
Floating garbage is periodically removed by the cleanup vessels, but garbage thrown into Horikawa is moved between estuary basin zone by the tidal effect, so they are stagnant for a long time. Many of floating garbage found are "Plastics".

Report about floating garbage in Horikawa River
JOURNAL OF HYDROSCIENCE AND HYDRAULIC ENGINEERING, No.52, Feb, 2008

Study on the Transport Characteristics of Floating Garbage in Horikawa River

Makoto TAKEDA, Morihiro HARADA, Akihiro TOMINAGA, Shozou ISHIGURO, Takayuki KONDO, Yoshiro NAKASHIMA, and Hitoshi YOSHIDA

(Summary)

1) More than 70 % of floating garbage is natural one. A lot of artificial garbage appears in downstream area. The most appearing natural garbage are dead trees and grasses entering into Horikawa River.
2) Floating garbage in downstream area near Hioki Bridge flows on the side, especially on the right bank, at the ebb, while they flows upstream on the center and both sides at the rising tide.
3) The water area in Matsushige lock makes effect on transport of garbage near Hioki Bridge. When it is ebb tide, floating garbage flows into the right bank of water area of Matsushige lock and gathers, then when it turns high tide, garbage flows out to whole surface.
4) By monitoring the garbage with GPS system, it was confirmed that the floating garbage transports between the middle basin section and Matsushige lock area again and again.
5) It was made clear that the water area of Matsushige lock contributes the prolongation of garbage floating, therefore the Horikawa River has the river with floating garbage.
6) By numerical analysis, it was shown that the transport of floating garbage in water area of Matsushige lock was caused mainly by density change of tidal phenomena in Horikawa River.
7) Based on the knowledge obtained, effective measures for garbage can be expected.

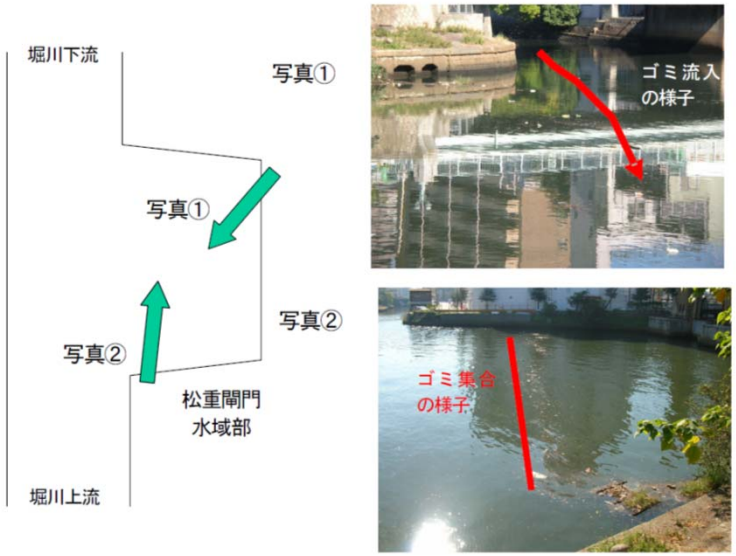


写真-3　松重閘門水域部のゴミの集積（下げ潮時）

写真-4　日置橋下流の浮遊ゴミの様子
（撮影時間：16:50）

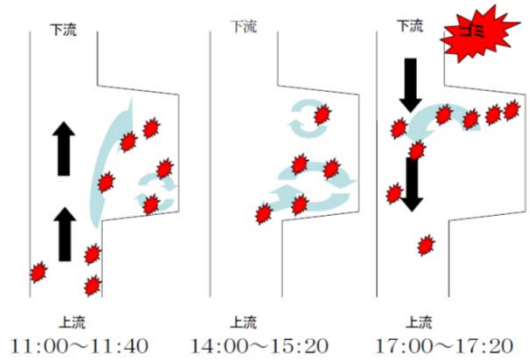


図-5　松重閘門水域部の浮遊ゴミの移動

8. Living things

The 2nd survey reault of living things (Horikawa bioliversity meeting)
Date :May 20th

A area:Chigomiya Bridge

B area:Downstream of Sanage Bridge

C area:Nakatsuchido Bridge

Photo:secretariat

Grouping	Speciesname	Figure			Recital
		A area	B area	C area	
Reptilian	red eared slider		turtlet	visual contact (male-3,female-4)	
Fish	floating goby	1	alevin(many)		
	gnathopogon elongatus	1			
	carp	visual contact (many)	visual contact (many) carp(2)	visual contact (2)	including carp
	hemibarbus barbus		1		
	nile tilapia			1	
Crastacea	neocaridina denticulata	10			
	japanesemitten crab	2			
	corixidae	1			
Insect kind	odonate lara of dragonify	some			
Shelifish	thiaridal snail	some			
	corbicula leana	some			
Waterweed	potamogeton oxyphyllus	many	many		
	eelgrass	many			
	egeria densa	a little			

The 3rd surbey result of living things (Horikawa bioliversity meeting)
Date:June 22nd
Confirm of 12 kinds of living things in upper stream Horikawa

Experiment of Horikawa clarification by water spinach

June 22nd～

Collaborative experiment with Ena agricultual high school
and Horikawa Lions club, this year again

Area : Around of Naya Bridge

2012.7.5 Yaguma elementary school 5 grade as River Planning Division Horikawa survey group observed a water spinach at Nayai Bridge

The first week

The third week

The fifth week

The seventh week

The eleventh week

The ninth week

Nile tilapia

Upstream of Nakatsuchido Brigde

Report : secretariat

Myocastor coypus

2012.6.16

Around Kurokawa No1Bridge.

Some eyewitness reports around Shinhori Bridge.

2012.6.23

Around Tabata Bridge.

Report:Goyousui-ato-gaien-aigokai Survey Group

Kind of Green crab

2012.7.2

Around Kameya Bridge

Report:Kawasemi survey group

Black bass

2012.7.2

Upstream of Nakatsuchido Bridge

Report : secretariat

Eyewitness report of the alien organism

Kind of Gar

2012.7.27 Nishiki Bridge

Report:Kawasemi survey group

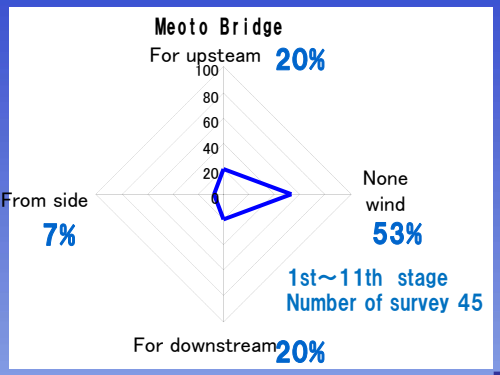
9. About wind

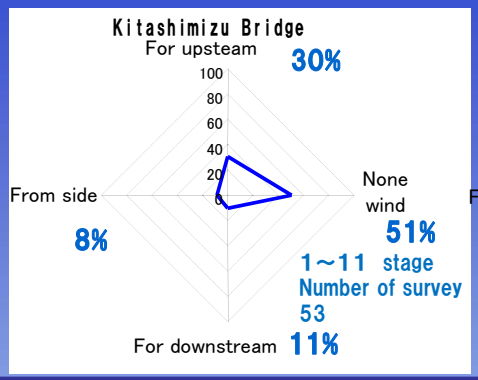
Direction of wind

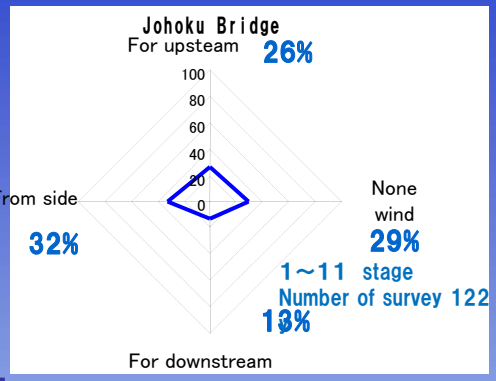
There are many direction of winds along Horikawa river

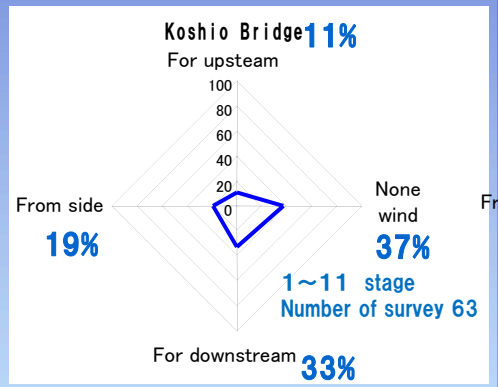
Wind for upstream

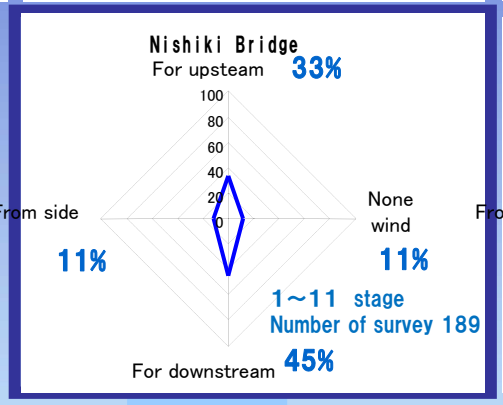
Wind for side

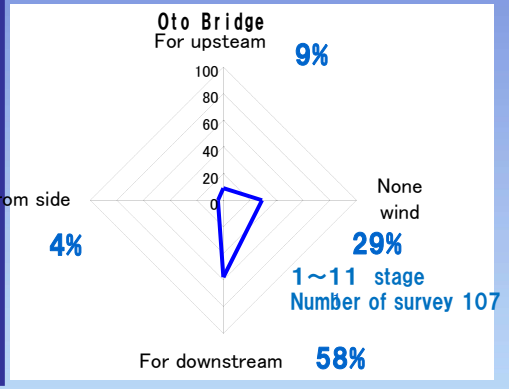




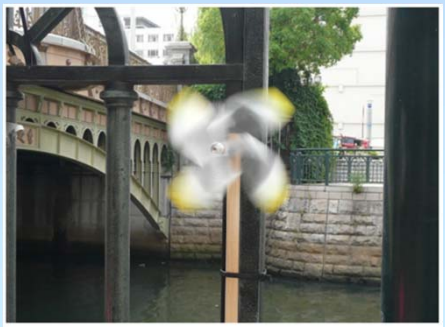








Wind for downstream



■How about the direction of wind？

We are organized it used all dates on the 11th stage from first stage.

It seem that there are more winds along Horikawa river than crossing it.

About 80% of wind blows along Horikawa river around Nishiki Bridge.

10. The Conclusion of the 1st Horikawa general investigation appearance of Horikawa at the time of spring tide

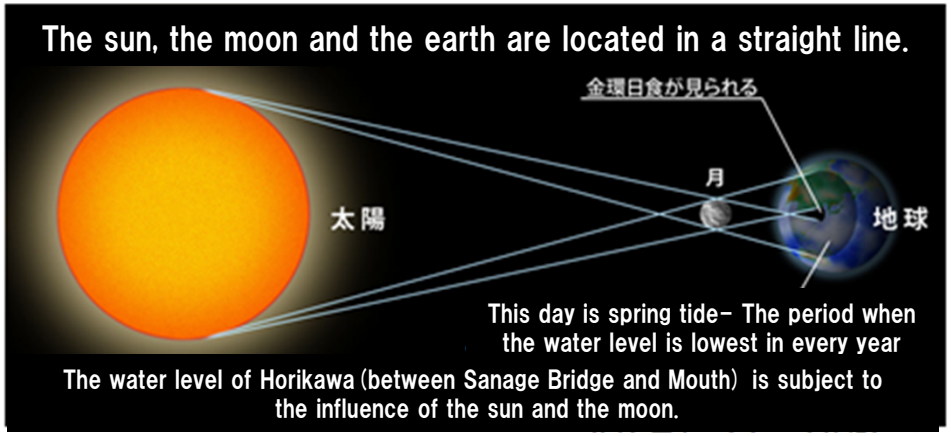
Photo taken by Kojo-Horikawa-to-seikatsu-wo -kangaeru chosatai

Horikawa Sen-nin Chosatai

The 1st Horikawa general investigation

Investigation day: May 20th,21st in 2012

In nagoya, it was annular solar eclipse for the first time in 932 years.
(the morning on May 21st)

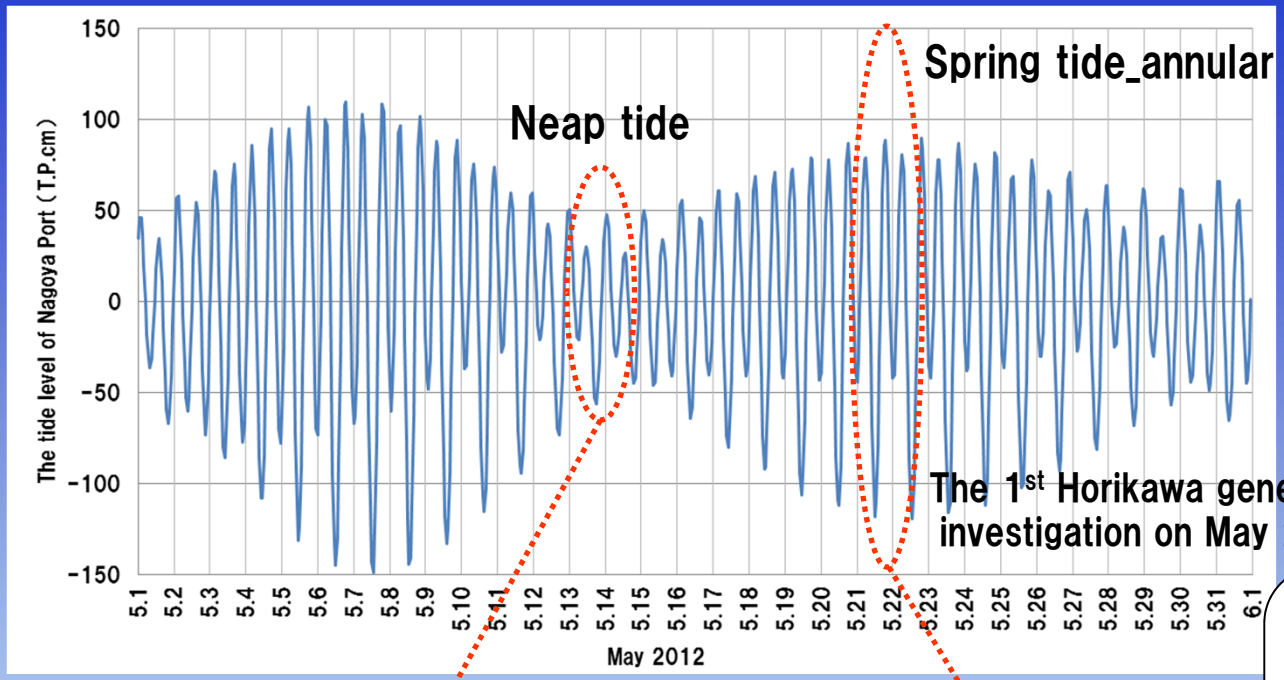


Reference: National Astronomical Observatory of Japan Public Relations Center

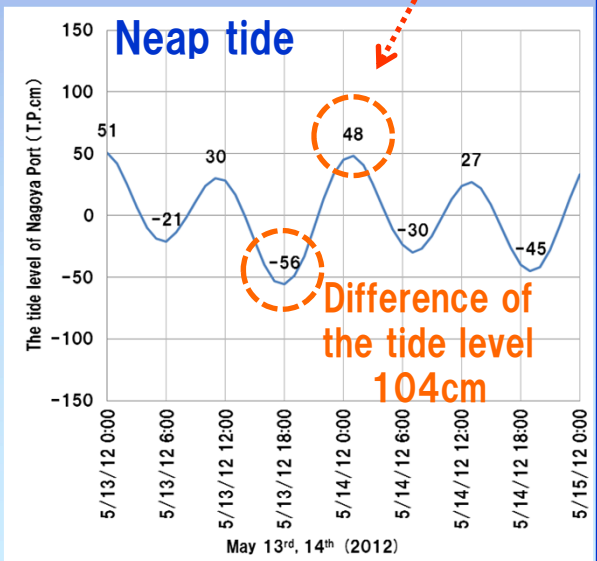
■The main points paying our attention

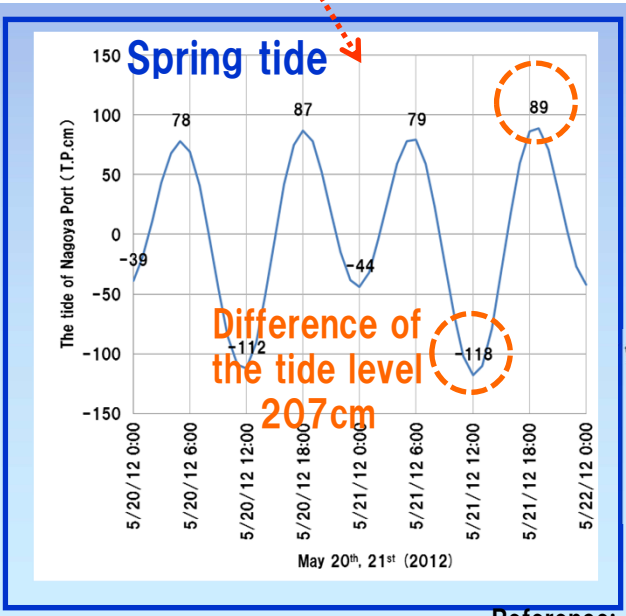
① Change of color, smell,bubble	If the time of investigation changes, the state of color of water, smell and bubble may change.
② The state of river bottom	We may be able to see the state that tide roll up sludge.
③ Appearance of living thing	Please observe the water surface and a water's edge. If dissolved oxygen is not enough, the kind of fish, crab, or shrimp will take refuge in the place near the water surface.
④ Appearance of tide	We may be able to the state of high and ebb tide.

The tide level of Nagoya Port in May 2012



May 21st
Ebb tide：12:10
High tide：19:39





- The difference of tide level of Nagoya Port of the day of spring tide (annular solar eclipse) was more than 2m.
- The difference of tide level of spring tide was twice of neap tide.

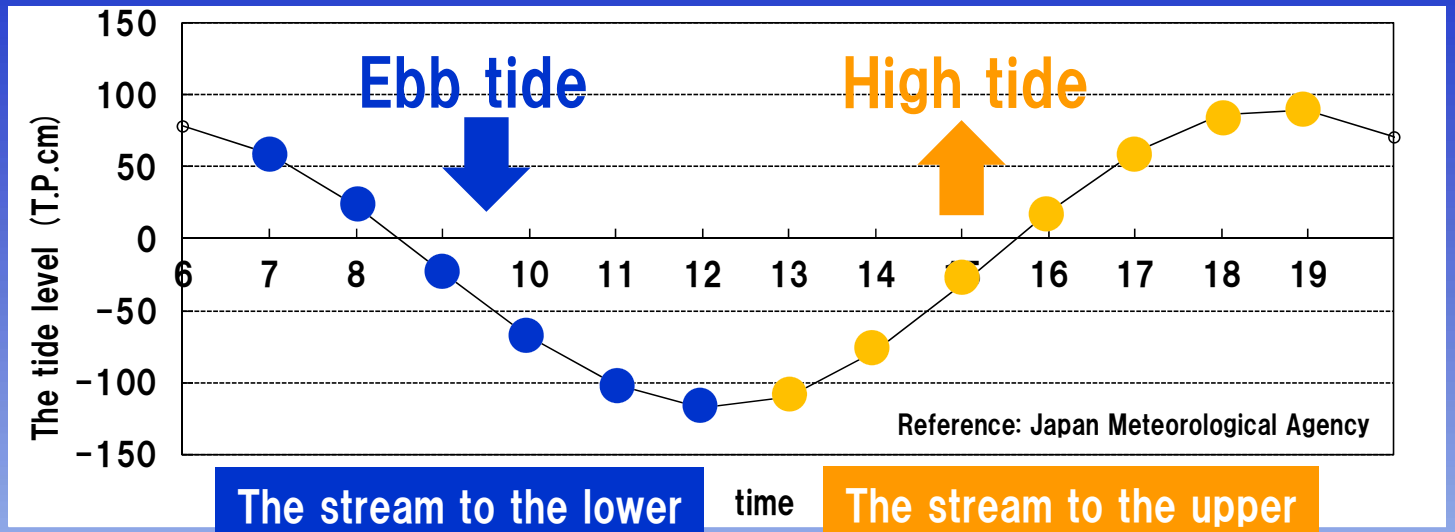
Reference: Japan Meteorological Agency

① Change of the direction of the stream

As the tide level changed, the direction of Horikawa's stream changed.

The tide level of Nagoya Port

May 21st
Ebb tide：12:10
High tide：19:39



The direction of Horikawa's stream

- As the tide level of Nagoya Port changed, the direction of Horikawa's stream changed.
- The stream to the upper was observed at Johoku Bridge.

Observation point	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
Meoto Bridge			↓										
Sanage Bridge				↓									
Siga Bridge				↓	↓								
Kitashimizu Bridge	↓	↓	↓		↓	↓							
Johoku Bridge				↓		↓					↑		
Nakatsuchido Bridge			↓	↓									
Sujichigai Bridge				↓							↑		
Habashita Bridge						↓							
Nishiki Bridge			↓				↑		↑		↑		
Naya Bridge					↓			↑	↑	↑			
Tennouzaki Bridge				↓									
Matsushige Bridge									↑				
Oto Bridge			↓			↓							
Sumiyoshi Bridge					↓		↑		↑				
Atsutakinen Bridge								↑	↑				
Oseko Bridge			↓			↓	↑		↑	↑		↑	
Kizaemon Bridge							—	↑					

Ebb tide

High tide

The stream to the upper was observed at Johoku Bridge.

* An arrow shows direction of the stream of the observation time.

② Change in the impression of cleanness

- The impression of cleanness gets worse around the time slot of low tide.
- After switching to flood tide, the impression of cleanness gets worse from a point of downstream.

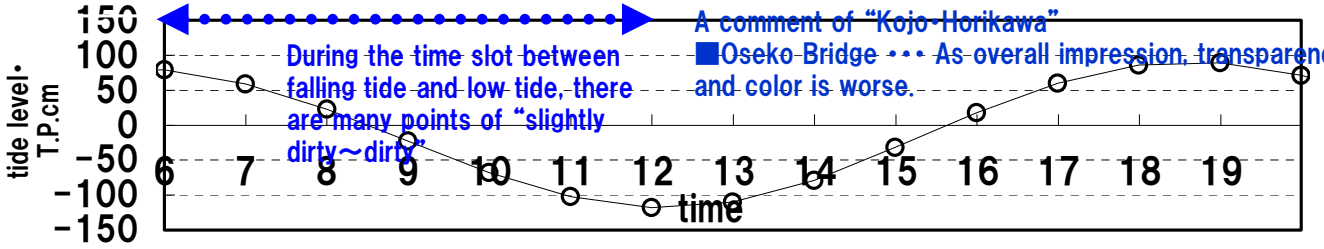
1:clean　2:slightly clean　3:fair　4:slightly dirty　5:dirty

point name	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 a.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.
Meoto Bridge			2↓										
Sanage Bridge				1↓									
Shiga Bridge				4↓	2↓								
Kitashimizu Bridge	5↓	2↓	4↓	4↓	4↓	2↓							
Johoku Bridge				5↓		4↓					2↑		
Nakatsuchito Bridge			4↓	4↓									
Suzikai Bridge				3↓							4↑		
Habashita Bridge						2↓							
Nishiki Bridge			3↓				5↑		3↑		5↑		
Naya Bridge					4↓			2↑	3↑	4↑			
Tennozaki Bridge				3↓									
Matsushige Bridge									3↑				
Oto Bridge			5↓			5↓							
Sumiyoshi Bridge					4↓		2↑		4↑				
Atsutakinen Bridge								3↑	3↑				
Oseko Bridge			5↓			4↓	2↑		4↑	3↑		4↑	
Kizaemon Bridge							5-	4↑					

A comment of "Kojo-Horikawa"
■Habasito bridge at 12 oclock ・・・ While both banks are dirty with mad, rocks on the bottom of the river are clean.

get worse

Note) The arrow on the right of the value shows the direction of flow at the time of observation



- During the time slot between falling tide and low tide, there are many points of "slightly dirty～dirty". Especially, The impression of cleanness gets worse around the time slot of low tide.
- As switching to flood tide, some points improved temporarily, after then the points of "slightly dirty～dirty" increased.

May 21th
Ebb tide: 12:10 p.m.
High tide: 19:39 p.m.

Note T.P : mean sea level of Tokyo Bay　　Reference: Japan Meteorological Agency

③ Change in color

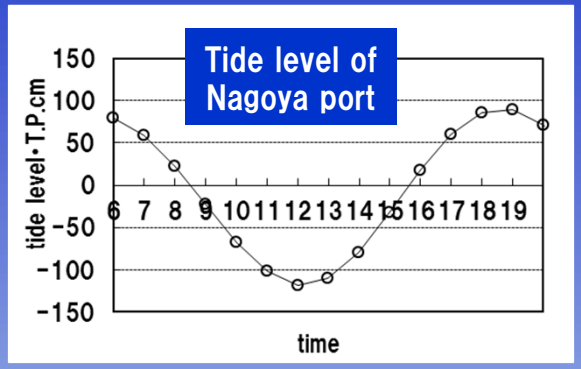
Color of the water changed depending on the time slot of survey

May 21th
Ebb tide: 12:10 p.m.
High tide: 19:39 p.m.

point name	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 a.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.
Meoto Bridge			1↓										
Sanage Bridge				1↓									
Shiga Bridge				5↓	1↓								
Kitashimizu Bridge	9↓	9↓	9↓	9↓	9↓	9↓							
Johoku Bridge				8↓		8↓					8↑		
Nakatsuchito Bridge			10↓	10↓									
Suzikai Bridge				8↓							10↑		
Habashita Bridge						8↓							
Nishiki Bridge			7↓				10↑		15↑		10↑		
Naya Bridge					9↓			8↑	10↑	9↑			
Tennozaki Bridge				8↓									
Matsushige Bridge									7↑				
Oto Bridge			7↓			9↓							
Sumiyoshi Bridge					9↓		8↑		7↑				
Atsutakinen Bridge								15↑	10↑				
Oseko Bridge			9↓			13↓	9↑		13↑	15↑		10↑	
Kizaemon Bridge							15-	15↑					

Greenish gray
It's thought to be due to roll up sludge.

Note) The arrow on the right of the value shows the direction of flow at the time of observation.



Reference: Japan Meteorological Agency

- Greenish gray was observed a lot at midstream. It's thought to be due to roll up sludge.
- During a time slot of falling tide, green-brown was observed a lot at mid・downstream. It's thought to be due to red tide (overgrowth of phytoplankton).

①Colorless
②Milky white
③Yellow
④Yellow-green
⑤Green
⑥Gray
⑦Yellowish gray
⑧Pale yellow-green ash
⑨Yellow-green ash
⑩Greenish gray
⑪Dark gray
⑫Pale Yellowish gray
⑬Tan
⑭Brown
⑮Green brown

Green brown
It's thought to be due to red tide.

During this time, red tide has happened at Nagoya port.

Note T.P : mean sea level of Tokyo Bay

④ Change in smell

Mainly, “no smell～slightly smell”

1:no smell 2:slightly smell 3:bad smell 4:sort of terrible smell 5:terrible smell

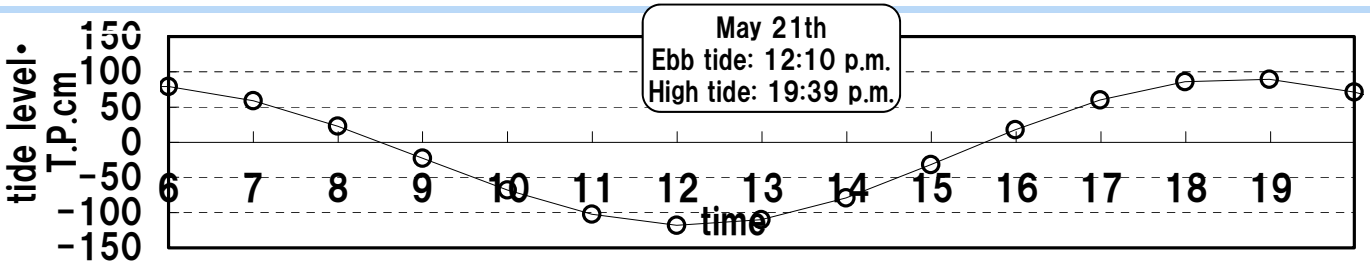
point name	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 a.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.
Meoto Bridge			2↓										
Sanage Bridge				1↓									
Shiga Bridge				2↓	1↓								
Kitashimizu Bridge			1↓	1↓	1↓	1↓							
Johoku Bridge				2↓		1↓					1↑		
Nakatsuchito Bridge			2↓	1↓									
Suzikai Bridge				1↓							1↑		
Habashita Bridge						2↓							
Nishiki Bridge			1↓				2↑		1↑		3↑		
Naya Bridge					2↓			1↑	1↑	1↑			
Tennozaki Bridge				1↓									
Matsushige Bridge									2↑				
Oto Bridge			1↓			1↓							
Sumiyoshi Bridge					1↓		1↑						
Atsutakinen Bridge								1↑	1↑				
Oseko Bridge			2↓			4↓	2↑		2↑	1↑		2↑	
Kizaemon Bridge							1-	1↑					

Note) The arrow on the right of the value shows the direction of flow at the time of observation

A comment of “Kojo・Horikawa”

■Nakatsuchito bridge at 10 oclock ・・・ While color of the water looked dirty, the water dipped up had no color and no smell.

While roll up sludge and red tide was observed, excepting some results of survey, the result was mainly “no smell～slightly smell”.
Thus the smell was slight.



Note T.P : mean sea level of Tokyo Bay

Reference: Japan Meteorological Agency

5 Change of smells

The reason of bad smell was Sludge

1:Ditch　2:sludge　3:rotten egg　4:pulp　5:sea　6:others

Point	7	8	9	10	11	12	13	14	15	16	17	18	19
Meoto Bridge			1↓										
Sanage Bridge				-↓									
Shiga bridge				1↓	-↓								
Kitashimizu Bri			-↓	-↓	-↓	-↓							
Jyouhoku Bri				2↓		-↓					-↑		
Nakatsutido Bri			1↓	2↓									
Sujichigai Bri				-↓							-↑		
Habasita Bri						-↓							
Nishiki Bri			-↓				2↑		-↑		2↑		
Naya Bridge					1↓			-↑	-↑	-↑			
Tennouzaki Bri				-↓									
Matsushige Bri									2↑				
Otou Bridge			-↓			2↓							
Sumiyosi Bridge					-↓		-↑		-↑				
Atsutakinen Bri								-↑	-↑				
Ooseko Bridge			1↓			-↓	5↑		-↑	-↑		-↑	
Kizaemon Bri							-	-↑					

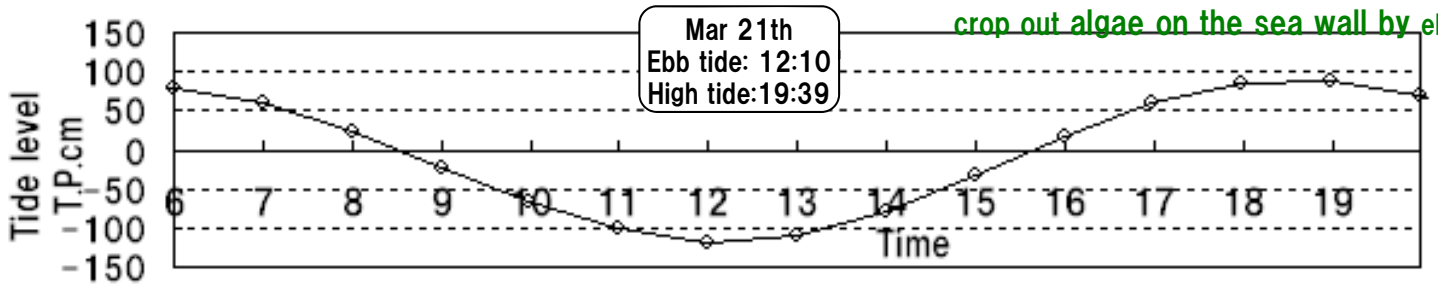
Smell of sludge

The reason is thought to be due to mixed sludge by flux and reflux of the tides

The reason of bad smell was Sludge.
The Smell of sludge is thought to be due to mixed sludge by flux and reflux of the tides

Note : Arrows means the flow direction at the time of measurement

It would appear that the smell of sea is due to crop out algae on the sea wall by ebb water.



Note T. P : mean sea level of Tokyo Bay

DATA of the japan Meteorological Agency

6 Change of bubbles

We observed bubbles from bottom of a river, when it was the term of falling tide at middle area, when it was the term of rising tide at lower area.

1: No bubble 2:from downstream 3:from upstream 4:from bottom

Point	7	8	9	10	11	12	13	14	15	16	17	18	19
Meoto Bridge			1↓										
Sanage Bridge				1↓									
Shiga bridge				1↓	1↓								
Kitashimizu Bri						4↓							
Jyouhoku Bri				4↓		4↓					1↑		
Nakatsutido Bri			1↓	4↓									
Sujichigai Bri				4↓							1↑		
Habasita Bri						1↓							
Nishiki Bri			4↓				4↑		1↑		1↑		
Naya Bridge					4↓			1↑	1↑	1↑			
Tennouzaki Bri				1↓									
Matsushige Bri									1↑				
Otou Bridge			1↓			-							
Sumiyosi Bridge					1↓		1↑		1↑				
Atsutakinen Bri								1↑	1↑				
Ooseko Bridge			1↓			4↓	1↑		4↑	1↑			
Kizaemon Bri							1-	4↑					

Middle area

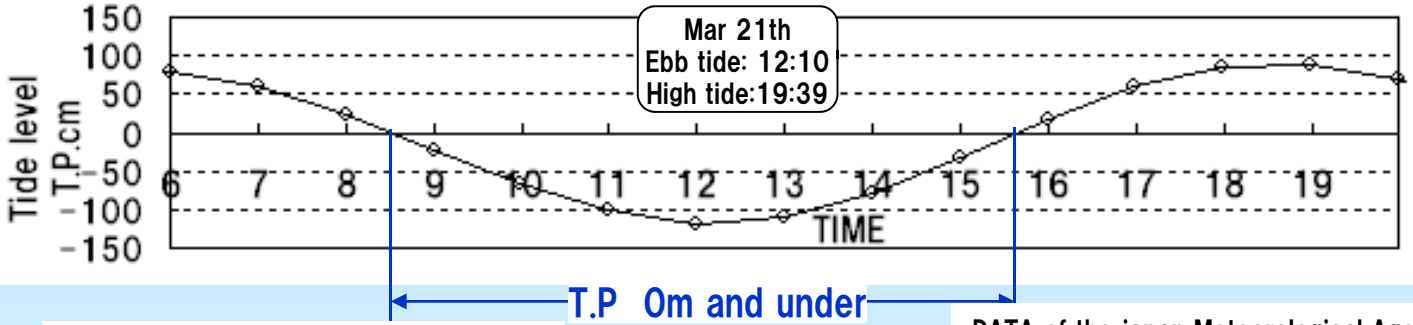
Drawdown → decrease in water pressure
Increase the water velocity → roll up sludge

Gasses of methane and others are given off easily from sludge

Lower area

Note : Arrows means the flow direction at the time of measurement

/At middle area, observed bubbles from bottom of a river when it was the term of falling tide.
/At lower area, observed bubbles from bottom of a river when it was the term of rising tide.
/We consider that gases of methane and others are given off easily from sludge. The causes of these situation are that drawdown lead to decrease in water pressure and Increasing the water velocity lead to roll up sludge

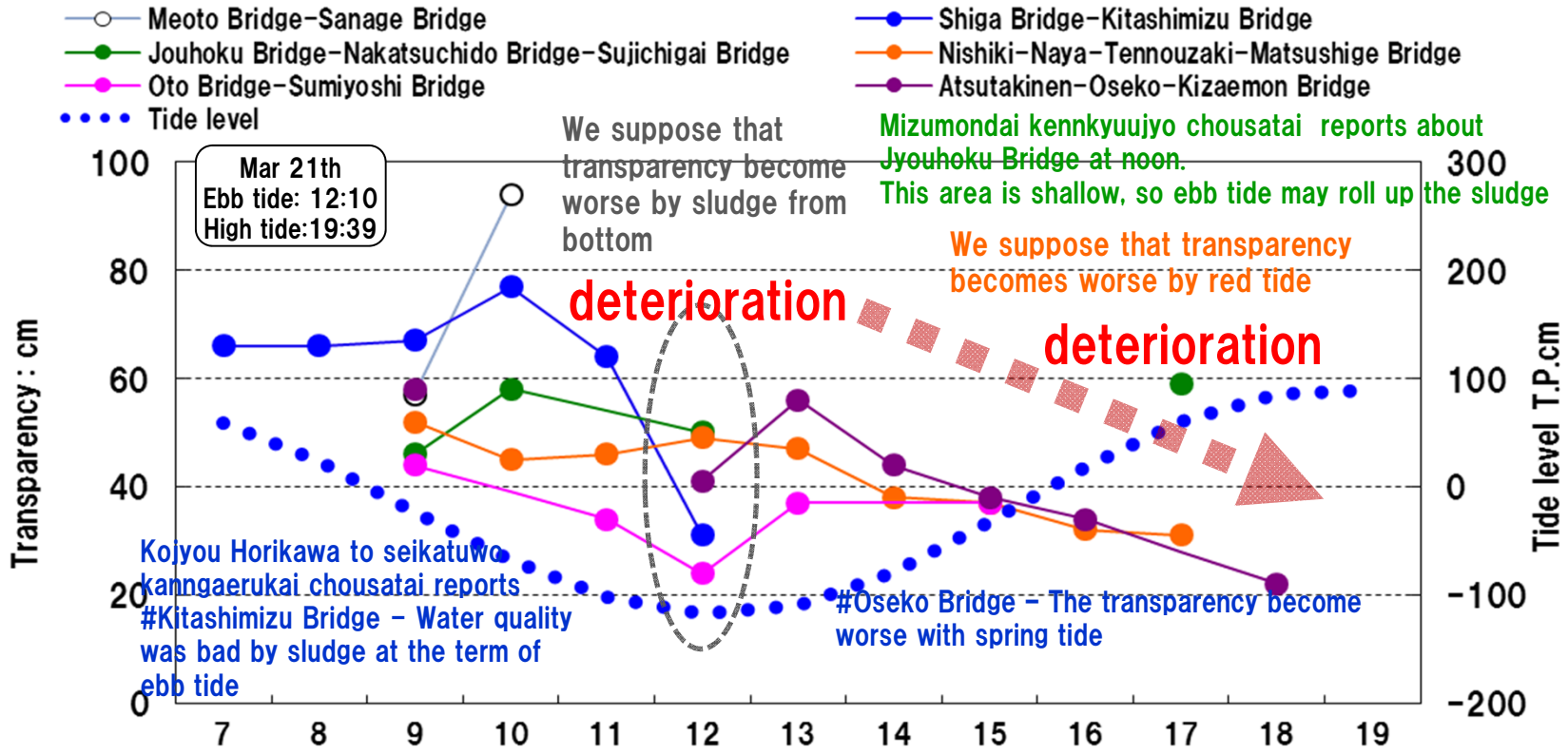


Note T. P : mean sea level of Tokyo Bay

DATA of the japan Meteorological Agency

7 Change of Transparency

Transparency becomes worse at ebb tide.
Transparency is temporarily-improved at the high tide, but it tends to become worse since then.



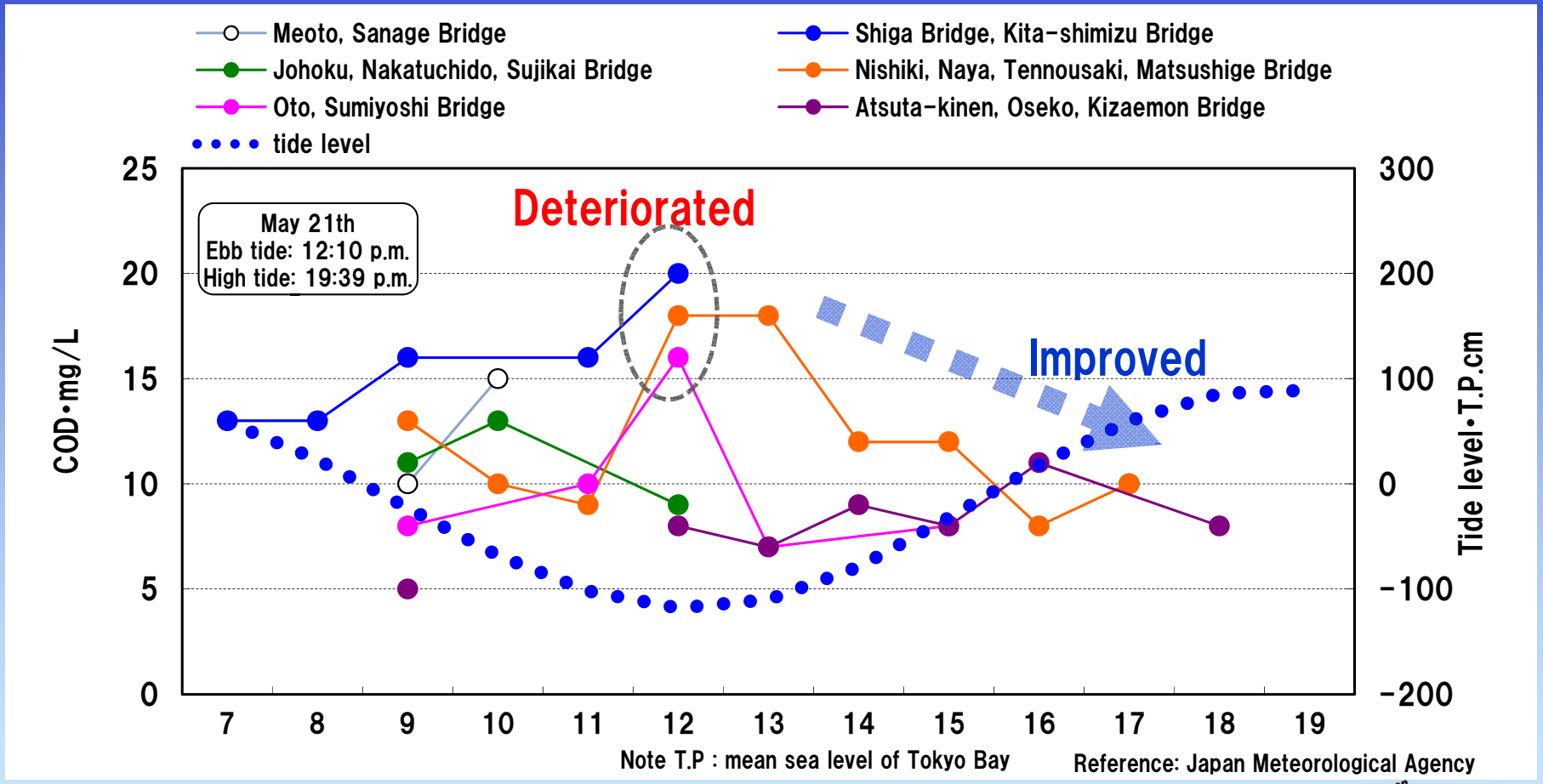
Note T. P : mean sea level of Tokyo Bay

DATA of the Meteorological Agency

Transparency becomes worse at ebb tide. We suppose that the reason is raised sludge from bottom.
Transparency becomes worse at high tide. We suppose that the reason is red tide: suspended substance as exemplified by phytoplankton.

⑧ Change of COD

- COD deteriorated during ebb tide
- COD is temporarily-improved at the high tide, but it tends to become worse since then.



- COD deteriorated during low tide. It is considered sludge was risen and caused.
- On the middle stream, COD tend to improve during rising tide. It is considered that sea water run up and COD of sea water was low.

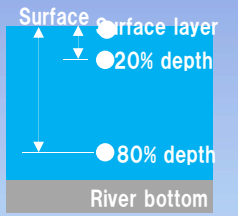
River planning department survey group

■It is considered that there were a lot of phytoplankton in the middle & downstream.
- Tide level rose and color of surface water got dark blown.
- DO of 20% depth was nearly saturated or oversaturated. The higher tide level, the larger DO. Especially, the value of Oseko bridge in downstream reached two times of saturation value.
- pH of surface was high with rising tide. (=got to alkalinity.)

■Blue tide was not seen.
- There was no hydrogen sulfide odor.
- DO of 80% depth remained over three times of saturation value.

Results

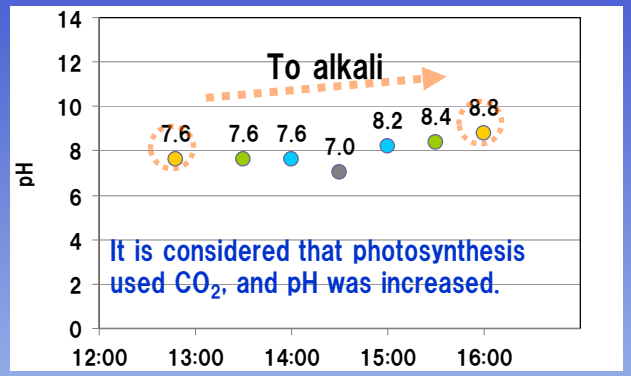
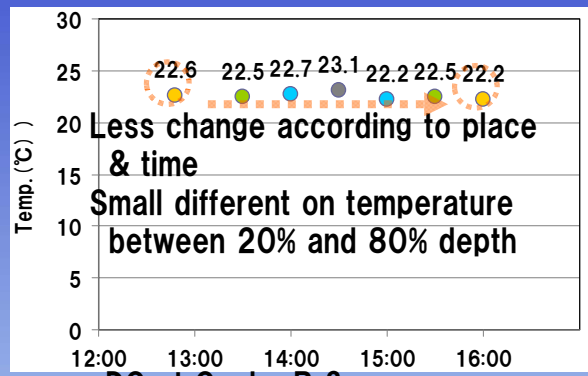
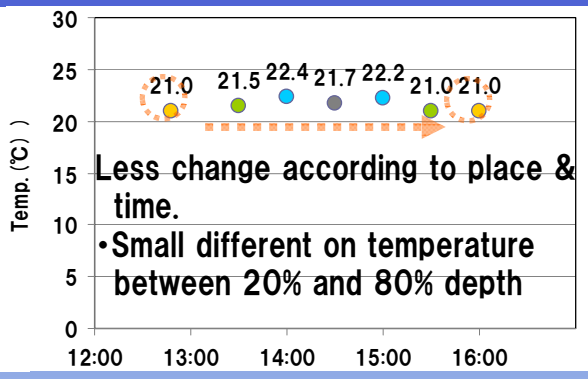
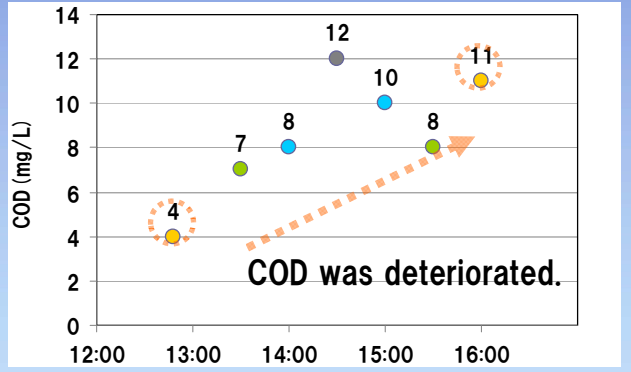
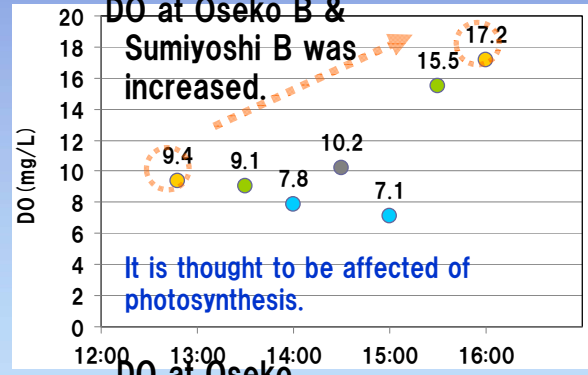
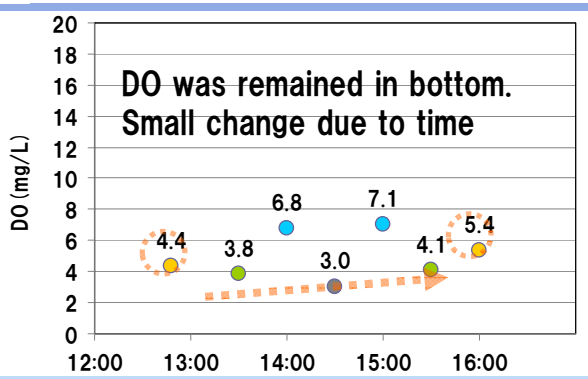
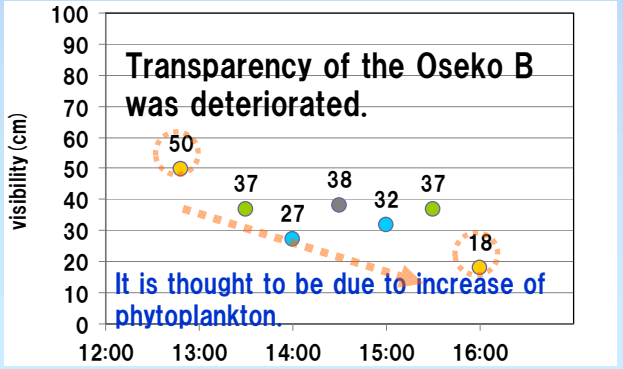
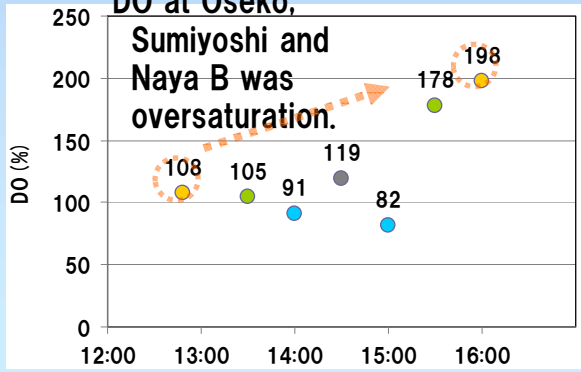
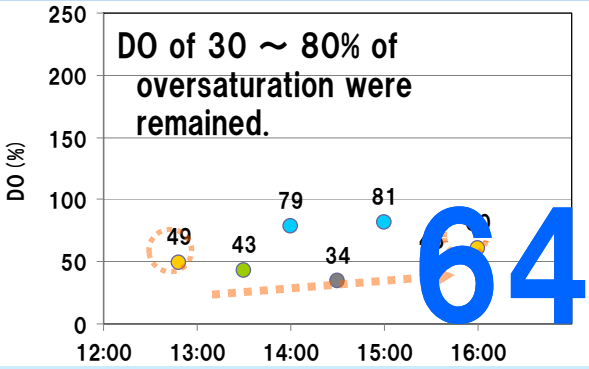
time	location	depth (m)	surface			20% depth			80% depth		
			pH	COD (mg/L)	visibility (cm)	temp. (℃)	DO (mg/L)	DO (%)	temp. (℃)	DO (mg/L)	DO (%)
12:48	Oseko B.	2.8	7.6	4	50	22.6	9.35	108.1	21.0	4.36	49.1
13:30	Sumiyoshi B.	3.0	7.6	7	37	22.5	9.07	104.6	21.5	3.82	43.2
14:00	Matsushige B.	2.1	7.6	8	27	22.7	7.84	90.8	22.4	6.81	78.5
14:30	Naya B.	1.8	7.0	12	38	23.1	10.17	118.8	21.7	3.02	34.4
15:00	Matsushige B.	3.7	8.2	10	32	22.2	7.10	81.6	22.2	7.05	81.1
15:30	Sumiyoshi B.	3.9	8.4	8	37	22.5	15.45	178.3	21.0	4.12	46.2
16:00	Oseko B.	4.5	8.8	11	18(34)	22.2	17.18	197.7	21.0	5.38	60.4



A lot of phytoplankton exist in water.

photosynthesis … $6CO_2 + 6H_2O + (Sun) \rightarrow C_6H_{12}O_6 + 6O_2$

Naya B.
Matsushige B.
Sumiyoshi B.
Oseko B.

	Surface	20% depth	80% depth
pH			
Temp. (℃)			
COD (mg/L)			
DO (mg/L)			
visibility (cm)			
DO (%)			

The reason why water get alkali due to photosynthesis

CO2 under water balances as below.

$CO_2 + H_2O \Leftrightarrow HCO_3^- + H^+$

By photosynthesis, hydrogen-carbonate ion (HCO_3^-) lost CO2, and hydrooxy-ion (OH^-) was remained, and then it gets alkali.

$HCO_3^- \rightarrow CO_2 + OH^-$

For CO2 was dissolved in water,

$CO_2 + H_2O \rightarrow HCO_3^- + H^+$

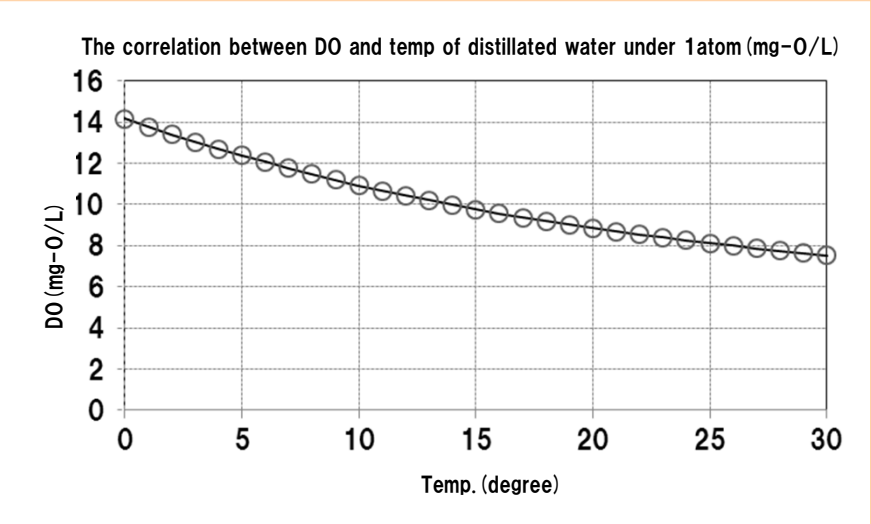
hydrogen ion (H^+) was increased and it gets to be acid.

What's the supersaturation ?

A saturation means that Dissolved Oxygen in water reached a limit (hereafter "saturation value"), oxygen could dissolve.

A saturation value of DO change according to air pressure, water temperature, dissolved salt ratio, and so on. For example, the saturation value of DO of distillated water under regular air pressure is shown as below figure.

There is a possibility that water area having a lot of phytoplankton, because many oxygen is released due to photosynthesis, measured value of DO excesses supersaturation. This situation is called as oversaturation.



The state of weather

Kiso River Irrigation Yosui – Water intake from Kiso River was partially restricted
Iwaya Dam– Percentage of storage 52%
Precipitation in Nagoya City– A quarter of annual level

木曽川用水 一部節水へ

4年ぶりきょうから 岩屋ダム貯水率52%

愛知、岐阜、三重各県の木曽川流域を中心に水を供給している木曽川用水の岩屋ダム（岐阜県下呂市）が、五月からの少雨で十五日に貯水率50%を下回る見通しとなり、三県の一部で十五日から取水制限（節水）が始まる。木曽川用水では二〇〇八年八月以来。

用水から供給を受けているのは愛知県の名古屋、一宮、津島各市など二十市町村、岐阜県では美濃加茂市、可児市、坂祝町など十市町。節水率は水道用水が5%、農業・工業用水は10%。各県は市民への節水の呼び掛けと地下水など他の水源からの補充で、節水分を賄えると判断している。

用水を管理する水資源機構によると、木曽川に注ぐ馬瀬川の岩屋ダム（利水容量六千百九十万トン）の五月の雨量は例年の27%にとどまり、五月二十六日から貯水量が減少。六月八日の梅雨入り以降も大きく回復せず、例年なら80%程度ある十四日の貯水率は52・2%まで下がった。

下流の水量を保つため放水は止められず、貯水率は一日に2・5～3%ずつ減っている。節水の目安となる50%を下回った後も少雨が続けば、さらに節水を段階的に強化する会準備会」をつくり、対応の協議を始めた。

十四日には機構内に渇水対策本部を設け、情報収集している。

愛知 他水系も節水準備

愛知県企業庁などによると、岩屋ダム以外で水道に給水するダム六カ所でも貯水量が減っている。十四日午前零時現在で、いずれも愛知県新城市にある大島ダムが貯水率35%、宇連ダムで44%などとなっている。

両ダムがある豊川水系では、流域市町村や土地改良区などが十一日から5%をめどに自主的な節水をしている。状況が悪化すれば、水資源機構が5%の取水制限を行う予定。県企業庁でも、今週末に雨が降らない可能性を考慮して、他の水系も含めた節水対策の準備を始めている。

国土交通省木曽川上流河川事務所によると、岐阜県内で木曽川、長良川、揖斐川の雨量観測所が記録した五月の総雨量は、平年の二、三割で観測史上最少となっている。

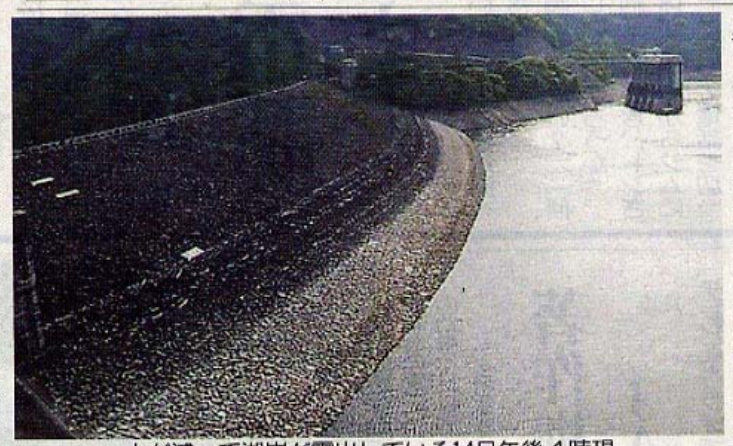
三重県企業庁などによると、三重県内のダムや調整池の貯水量はほぼ平年通り。

名古屋と岐阜の雨平年の4分の1に

5月半ば以降

名古屋地方気象台によると、五月半ばから今月十三日までの累積降水量は、平年と比べて名古屋市と岐阜市は25%、津は62%と少なく、各地で小雨傾向が続いた。

ただ、十五日夜からは梅雨前線の影響で、中部地方の広い範囲で雨になる見込み。一週間ほど続き、強い雨になるところもありそう。同気象台は「しばらく雨が続くので、貯水量はある程度回復するのではないか」と話している。

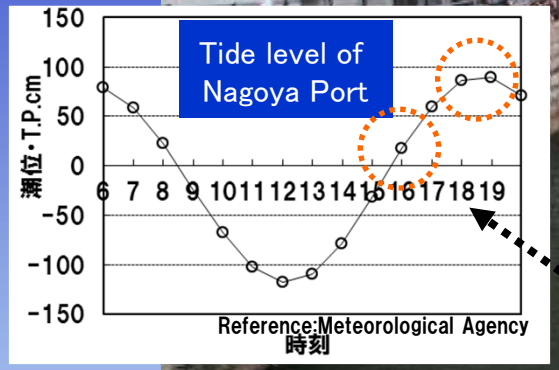


水が減って湖岸が露出している14日午後4時現在の岩屋ダム＝ダム管理所のホームページから

Reference: Chunichi Newspaper, Jun 15, 2012, morning edition

⑨The state of peripheral part of salt water

The peripheral part of salt water migrated to upstream



Salt water

Investigation party of River Planning Division confirmed the upstream migration of the garbage from past 16:00 to around 16:30 at Naya Bridge.

Salt water would be pushed up by the strong power of upstream migration of spring tide. It was thought that the peripheral part appeared as a junction line between the salt water and river water

Nishiki Bridge May 21, 18:20- 18:30

Photo by Kawasemi Investigation party

The state of salt water at the day of the previous partial solar eclipse

At Nishiki Bridge of Horikawa river July 22,2009, 18:45- 18:55

Photo by Kawasemi Investigation par

The image of upstream migration of salt water at the time of the high tide

Nagoya Port

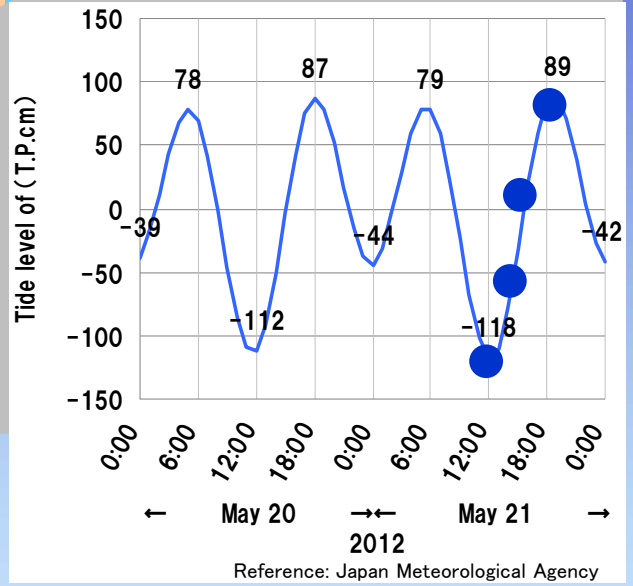
▼ Peripheral part

Freshwater

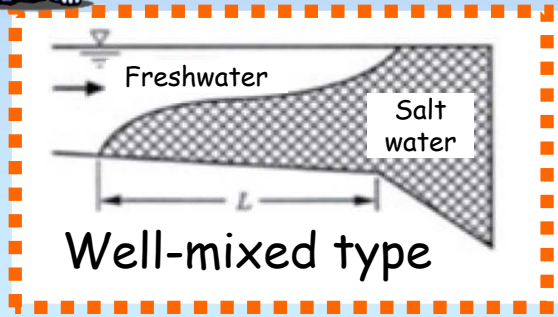
At the time of the high tide of the spring tide, salt water become strong flows and is pushed up.
At this time, a lump of the fresh water collides head-on into a lump of the salt water, and it is thought that both water is pushing each other.
It is thought that this becomes the junction line.

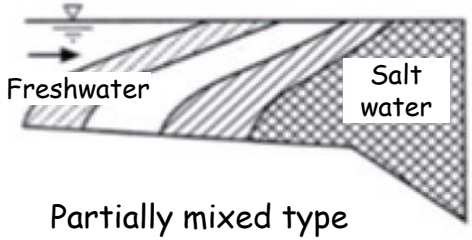
➡ Salt water

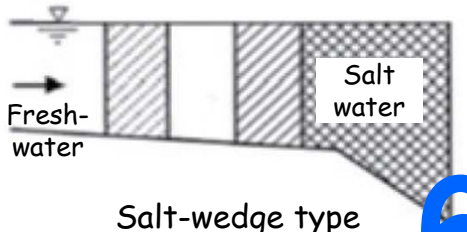
It is thought that salt water and freshwater become the salt-wedge type at the time of the flood tide of Horikawa



Reference: Japan Meteorological Agency







Reference: River erosion control technical standard Report

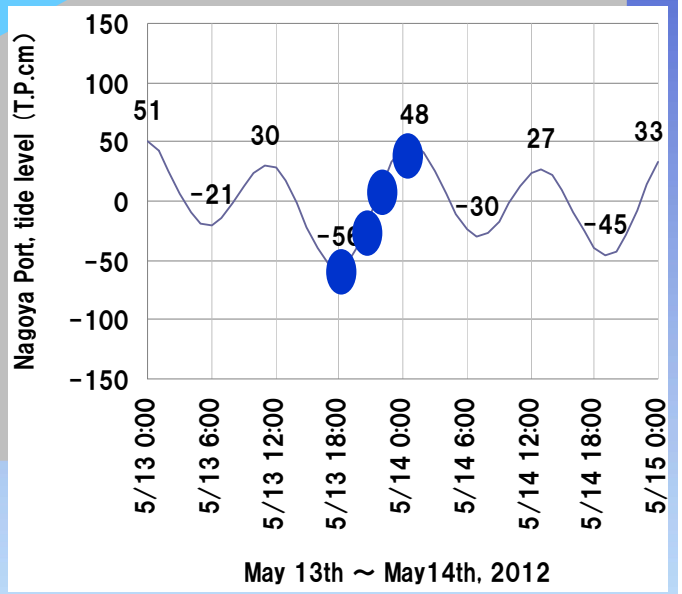
Reference : image “upstream of salt water when neap tide”

Nagoya Port

Fresh water

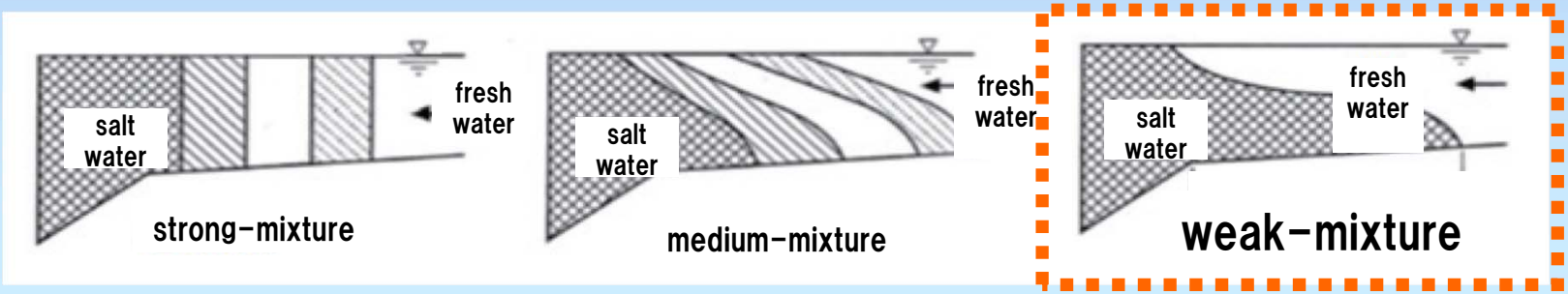
Salt water

When tide is high in neap tide, upstreaming force of salt water is not so strong. Therefore salt water is not mixed with fresh water very well and salt water goes under fresh water by heavier specific gravity.



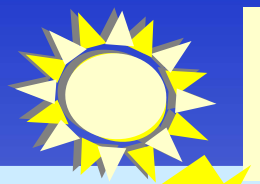
Data : the Japan Meteorological Agency

It is supposed that salt water and fresh water are weakly mixed when neap tide in Horikawa river.



Material : standard of river erosion control technology, survey voleme

Mechanism that red tide and blue tide appear



weather condition
(rainfall, temperature, hours of sunshine)

inflow of dirty water
(organic substance, nitrogen, phosphorus)

rain

smell like an addled egg

blue tide red tide

phytoplankton →photosynthesis
zooplankton

increase

death

sinking

Sinking

non smell

Horikawa River

Hydrogen Sulfide (H_2S)

When tide level changes largely like spring tide, a mass of clouded water (part of sulfide react with oxygen and create sulfuric colloid) including sulfide (mainly H_2S, HS^-) is strongly mixed and moves upstream.

consuming oxygen with decomposition of organic substance

methane

$2H_2S + O_2 \rightarrow 2S + 2H_2O$
$2H_2S + CO_2 + sun \rightarrow CH_2O + 2S + 2H_2O$

bacteria that create methane
(mostly live in the mud)
＊bacteria that like environment without oxygen

lack of oxygen

sea water

SO_4^{2-}
(including sulfate ion)

pilled up as sulfide (H_2S, S^- etc) in the mud and water

sulfate deoxidation bacteria
(mostly live in the mud)
＊bacteria that like environment without oxygen

When nitrate deoxidation bacteria decompose organic substance a sulfate ion (SO_4^{2-}) is deoxidized and hydrogen sulfide (H_2S) occur.

SO_4^{2-} + organic substance → $S^{2-} + H_2O + CO_2$
$S^{2-} + H^+ \rightarrow HS^-$ $HS^- + H^+ \rightarrow H_2S$

methane creating bacteria creating methane with CO_2 and H_2

$4H_2 + CO_2 \rightarrow CH_4 + 2H_2O$

- There're not many anti-salt methane creating bacteria
- Methane creating bacteria mainly occupy in the area with few SO_4^{2-}
- Energy source for methane creating bacteria is H_2 that is created with decomposition of organic substance by other anaerobic bacteria.

Why didn't blue tide appear on the day of annular solar eclipse on May 21st, 2012 ?

Comparison of the data between red tide on May 21st,2012 and blue tide on July 22nd, 2009

item			①annular solar eclipse May 21st, 2012 red tide		②solar ecipse July 22nd, 2009 blue tide	① - ②
change of tide	the tide level	max (T.P.cm)	126	≒	124	2
		min (T.P.cm)	-138	≒	-145	7
	difference of the tide level	max (cm)	263	≒	261	2
		min (cm)	89	≒	92	-3
inflow of dirty water	rainfall	total (mm/month)	100	<	262	-162
		max (mm/day)	30 on May 15th, long tide	<	103 July 17th, long tide	-73
increase of phytoplankton, zooplankton and the fungi	temprature	ave (℃)	18	<	26	-8
increase of phytoplankton	hours of sunshine	ave (hour)	7	>	4	3

Data : the Japan Meteorological Agency, surveyed during the previous 30 days

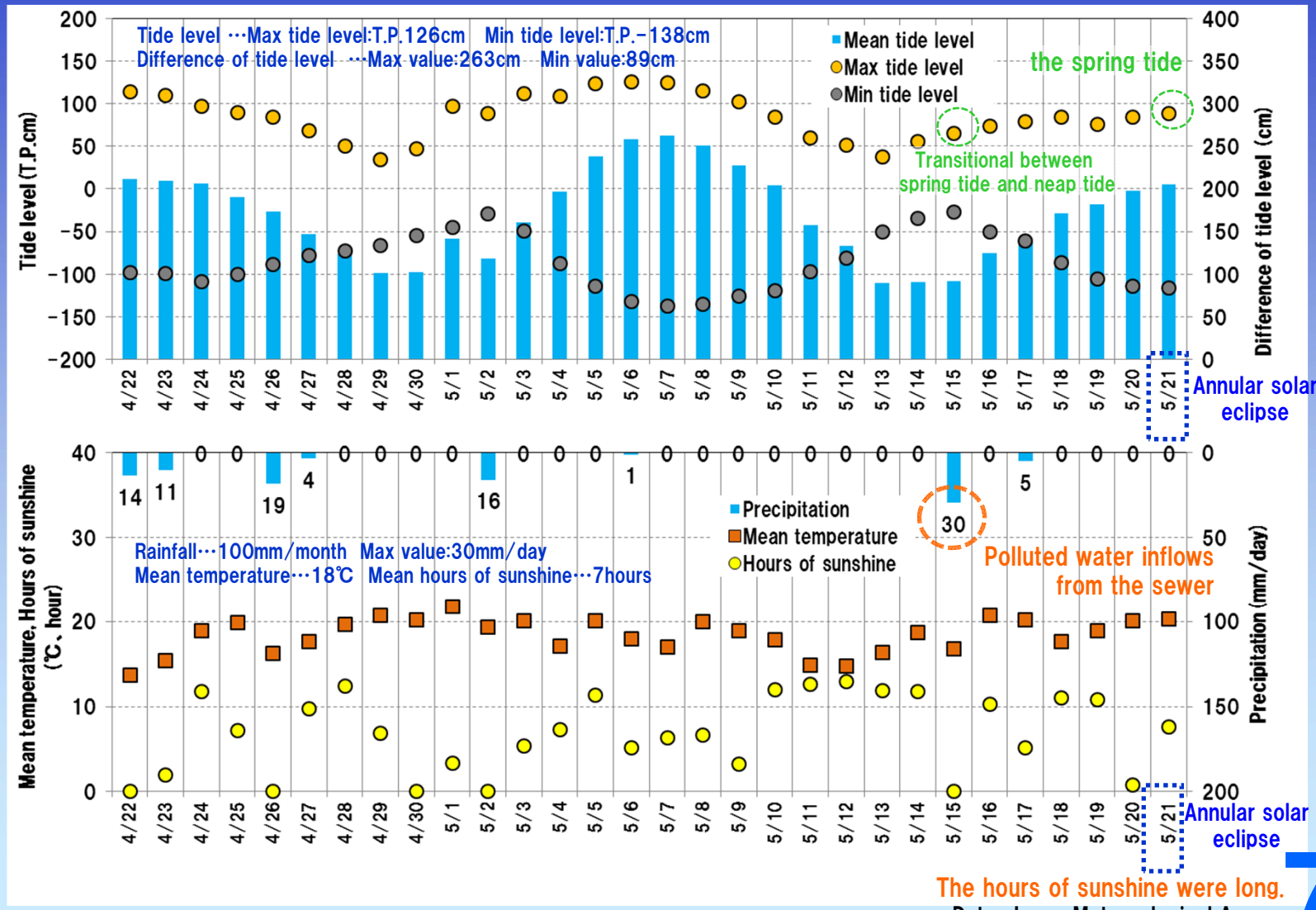
•annular solar eclipse on May 21st, 2012•••red tide appeared

On six days before that day, it rained 30mm/day during long tide and dirty water flowed into Horikawa river basin. Then phytoplankton, or red tide, increased by long hours of sunshine. It is supposed that blue tide didn't appear because oxygen shortage by consumption of oxygen with decomposition of organic pollution was not heavy thanks to photosynthesis during daytime.

•solar eclipse on July 22nd 2009 •••blue tide appeared

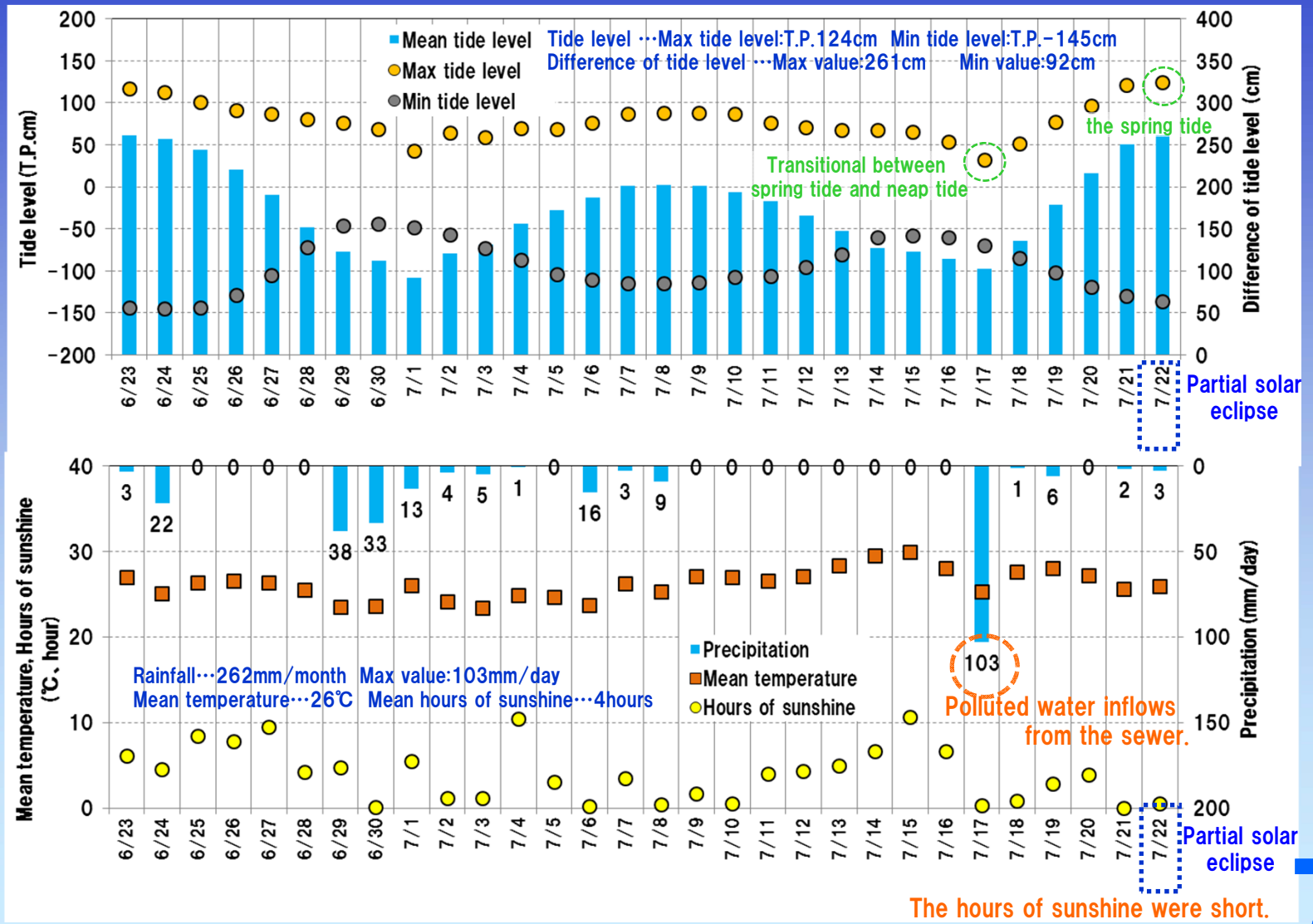
On five days before that day it rained over 100mm/day during long tide and much dirty water flowed into Horikawa River basin. It is supposed that blue tide appeared on the midstream and downstream because the basin got under oxygen shortage condition caused by consumption of oxygen with decomposition of much organic pollution.

Annular solar eclipse May 21, 2012
Change of the weather condition and tide level in the last one month



Data: Japan Meteorological Agency

Partial solar eclipse July 22,2009
Change of the weather condition and tide level in the last one month

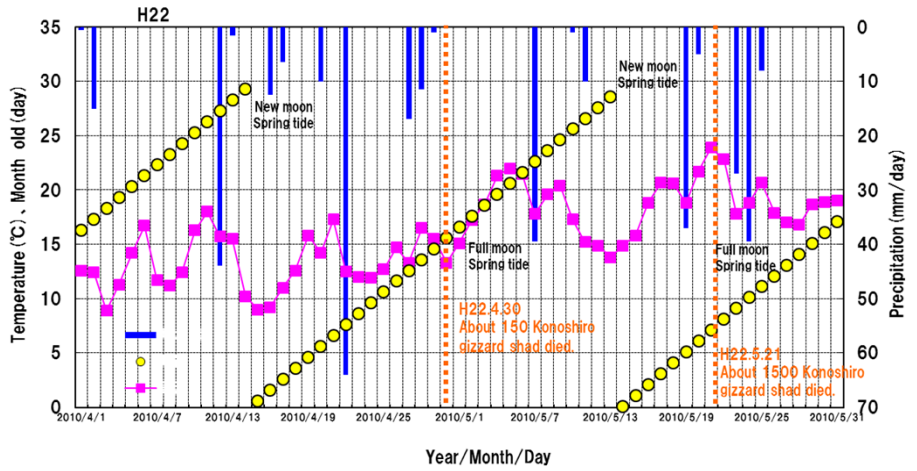


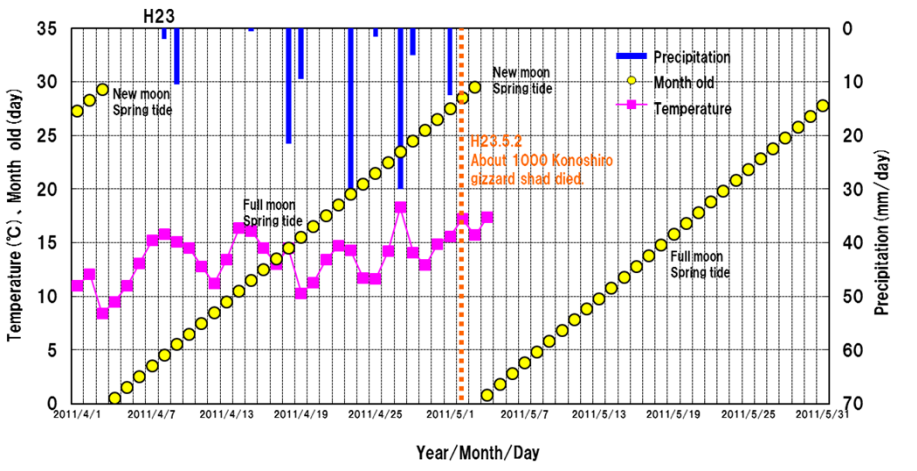
Data: Japan Meteorological Agency

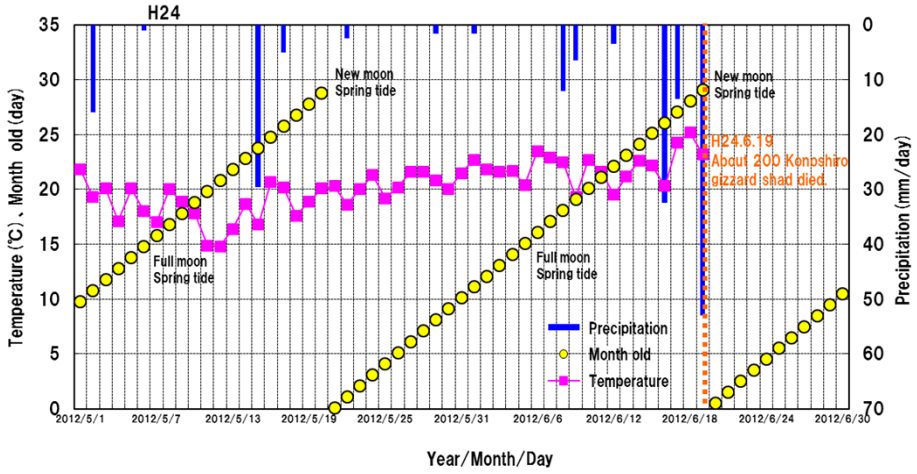
What kinds of situation make the river hypoxic?

Most of causes of the death fish in Horikawa river are lack of oxygen

We arrange the types of the situation when Horikawa river becomes in short of Oxygen, based on the knowledge about the outbreak of the death fish which Horikawa Sen-nin Chosatai identified so far.







What was the main cause of the outbreak of the death fish?

- Shortage of Oxygen in Horikawa river

When did a death fish occur?

- From April to June when winter was over, and water temperature rised
- Spring tide
- After the rain

It has been reported that a lot of sludge, which has accumulated in the bottom during the winter, float to the surface with bubbles when the water temperature rises in the spring.

Mass fish deaths in Horikawa River (2007 - 2012)

Sources from website of *Nagoya city* and *Japan Meteorological Agency*

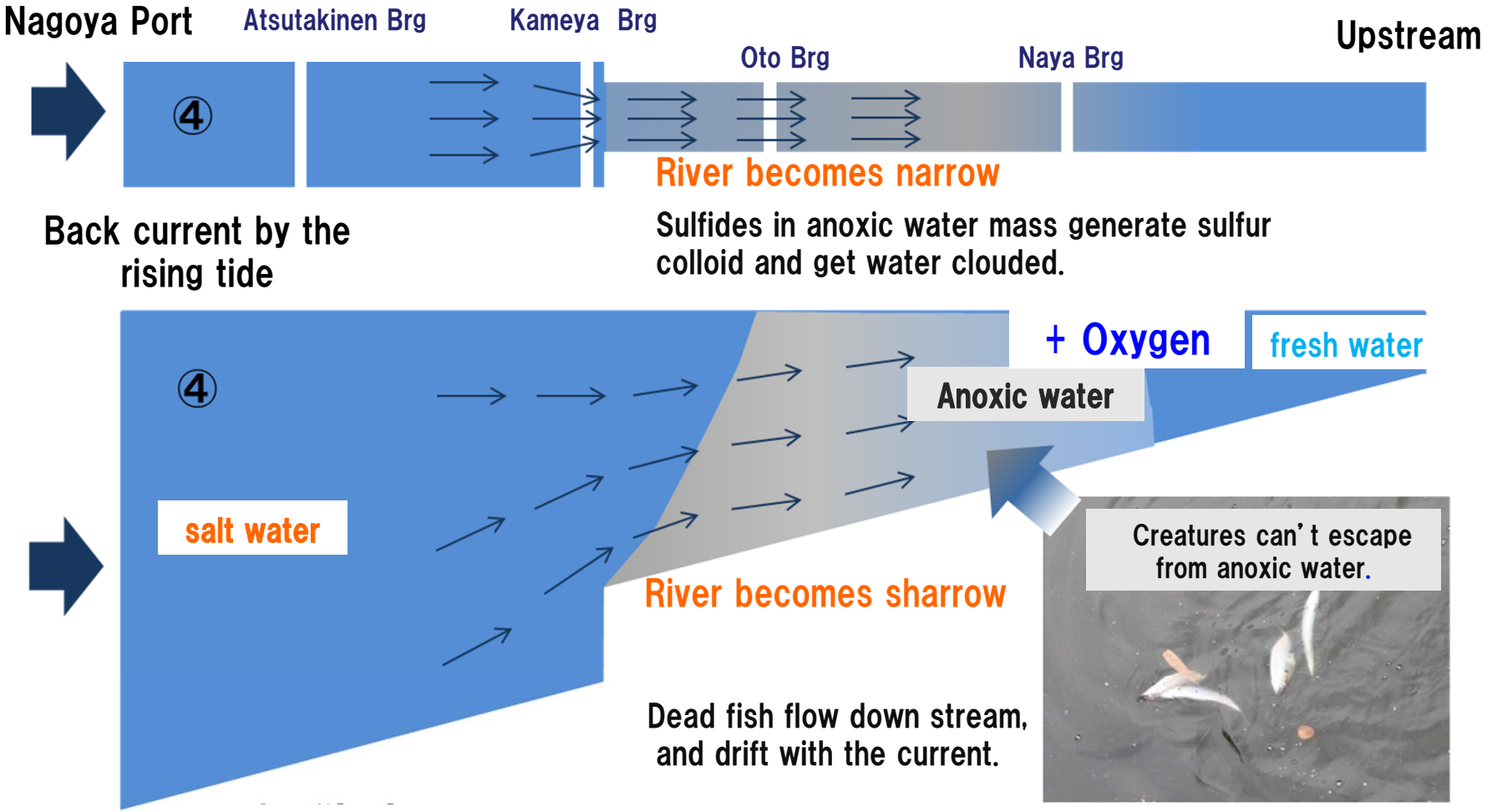
Date	Tidal condition	Luna age	Average temp (℃) ※	Precipi -tation (mm) ※	Scene of observation	Cause	Fish species	length (cm)	body amount	remark
2007/5/28	middle	11.3	21	46	Oseko Brdg - Minatoshin Brdg	Low DO	gizzard shad	15~20	1000	
2008/6/23	middle	19.3	23	99	Shinsuzaki Brdg - Hataya Brdg	Unknown	goby	5	250	
2010/4/30	spring	15.6	16	56	Naya Brdg - Hataya Brdg	Low DO	gizzard shad	20	150	dated
2010/5/21	neap	7.1	20	36	Shiratori Brdg - Minatoshin Brdg, Uchida Brdg - Horikawa River Confluence	Unknown	gizzard shad	20	1500	
2011/5/2	spring	28.5	14	104	Shiratori Brdg - Kiraku Brdg	Low DO	gizzard shad	20~30	1000	
2011/5/16	spring	12.8	19	134	Matsushige Brdg	Low DO	gizzard shad	20~30	50	rotten
2011/5/16	spring	12.8	19	134	AtsutaKinen Brdg - Kiraku Brdg	Low DO	gizzard shad	20~30	1500	rotten
2012/6/19	spring	29.1	21	36	Furuwatari Brdg - Shiratori Brdg	Unknown	gizzard shad	20~25	200	

※ survey period : between the previous neap tide and the day

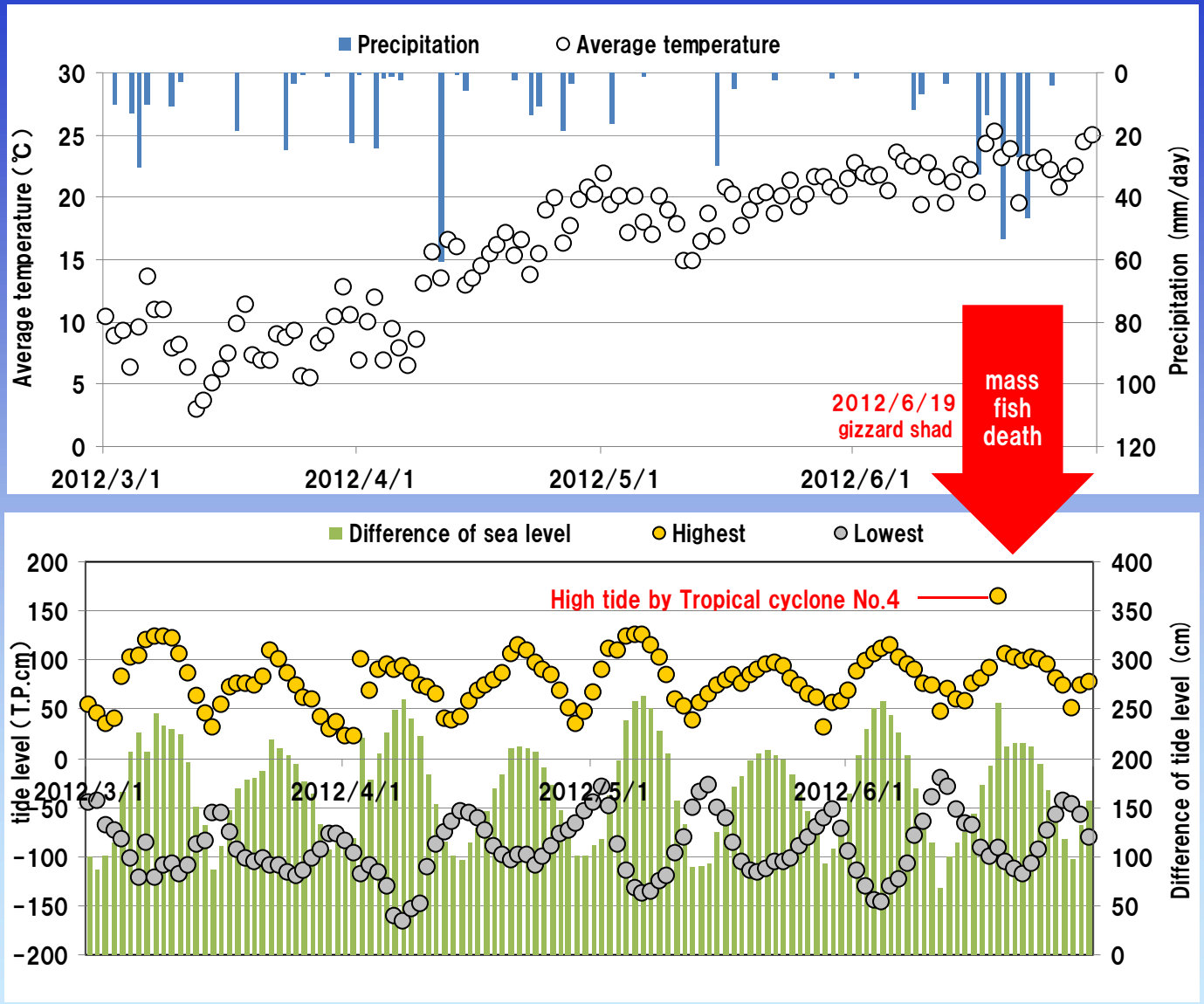
①From late April to June.. Average temperature 14 - 23 degrees C (between the previous neap tide and the day)
•The organic substance makes layer at the river bottom while the winter for low water temperature. When spring comes, the activity of aerobic microbes increase and oxygen of the river bottom is consumed with biological decomposition of the organic substance.
•The wandering fish go up in Horikawa River such as gizzard shad, mullet and goby in this period.
②After rain falls ... Precipitation amount 36 - 134mm (between the previous neap tide and the day)
•Organic substance flows out from rain drainages of combined sewer system, and causes oxygen consumption.
•Flood stirs organic substance layer on river bottom and spreads it into water.
③From middle tide to spring tide ··· Surface water and anoxic water of the bottom get mixed through rising tide, and all water are in a anoxic condition. It may be occurred by high tide. (H24.6.19)
④Among midstream - downstream area ··· Anoxic water can move up by rising tide (creatures lose a refuge).


Bottom sludge comes up to surface in spring.

Movement of anoxic water



Mass fish deaths in Horikawa River（March – June. 2012）

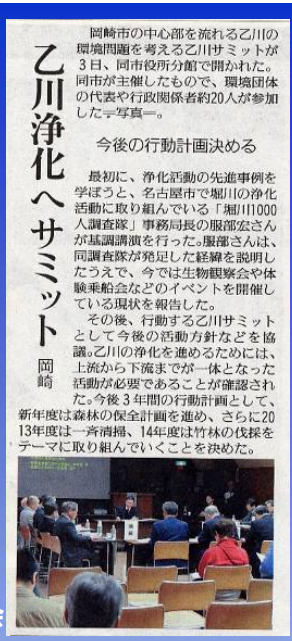


Sources from website of *Nagoya city* and *Japan Meteorological Agency*

11. Progress of Citizen's Awareness – Activities of Studies

平成24年2月25日（土）
第10回堀川1000人調査隊会議　報告：事務局

第5回堀川まちづくり協議会幹事会　第3回堀川まちづくり協議会
平成24年1月24日（火）　平成24年2月14日（火）
参加：堀川1000人調査隊、クリーン堀川など市民団体代表者
報告：事務局



乙川浄化へサミット　岡崎

岡崎市の中心部を流れる乙川の環境問題を考える乙川サミットが3日、同市役所分館で開かれた。同市が主催したもので、環境団体の代表や行政関係者約20人が参加した＝写真＝。

今後の行動計画決める

最初に、浄化活動の先進事例を学ぼうと、名古屋市で堀川の浄化活動に取り組んでいる「堀川1000人調査隊」事務局長の服部宏さんが基調講演を行った。服部さんは、同調査隊が発足した経緯を説明したうえで、今では生物観察会や体験乗船会などのイベントを開催している現状を報告した。

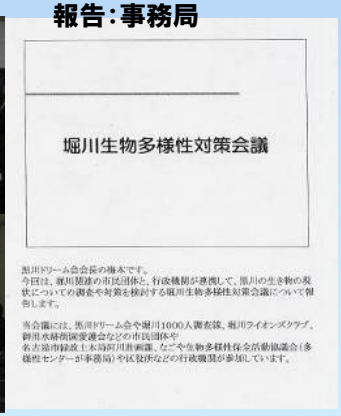
その後、行動する乙川サミットとして今後の活動方針などを協議。乙川の浄化を進めるためには、上流から下流までが一体となった活動が必要であることが確認された。今後3年間の行動計画として、新年度は森林の保全計画を進め、さらに2013年度は一斉清掃、14年度は竹林の伐採をテーマに取り組んでいくことを決めた。

読売新聞
平成24年3月4日（日）　朝刊

第4回
乙川サミット
平成24年
3月3日（土）
発表・報告：事務局

堀川生物多様性対策会議
平成24年1月26日（木）
報告：事務局

第47回北区地域環境審議会
堀川の生物多様性対策会議
の活動について発表
平成24年3月8日（木）
堀川1000人調査隊2010
実行委員会 梅本隆弘会長
報告：事務局



中日新聞 平成24年5月21日（月）　朝刊

第2回　堀川生物調査　平成24年5月20日（日）

第3回 堀川生物調査
平成24年7月22日（日）

主催：堀川生物多様性対策会議
報告：御用水跡街園愛護会調査隊
事務局

11. Progress of Citizen's Awareness – Activities of Studies

猿投橋から黒川樋門までを散策
平成24年4月5日（木）
転勤者妻の会 ひまわり
報告：御用水跡街園愛護会調査隊

「どう向き合う？外来生物」シンポジウム
平成24年3月10日（土）
報告：御用水跡街園愛護会調査隊

御用水跡街園の散策 はぐろ・コミュニティ
平成24年3月24日（土）
報告：御用水跡街園愛護会調査隊

名古屋城の将来を語る市民大討論会
平成24年2月19日（日）
報告：御用水跡街園愛護会調査隊

黒川樋門でスケッチ
平成24年4月25日（水）
名古屋高年大学美術部
報告：御用水跡街園愛護会調査隊

伊勢湾流域圏
再生フォーラム
平成24年3月3日（土）
参加：堀川1000人
調査隊2010
報告：事務局

堀川応援隊
名古屋工業大学大学院教授
秀島栄三先生が講演
平成24年7月22日（日）
「かわづくり×まちづくり：
名古屋・堀川を中心に」

中川運河再生シンポジウム2012
平成24年8月4日（土）
発表：堀川1000人調査隊
2010事務局
報告：事務局

レポート
堀川をいかしたまちづくりを考える
ワークショップ
平成24年3月23日（金）
報告： 事務局

11. Progress of Citizen's Awareness – Activities of Studies

八熊小学校4年生　堀川総合学習会　平成24年1月27日（金）

正木小学校5年生　堀川水質調査
平成24年2月17日（金）

飯田小学校3年生　堀川観察会
平成24年5月31日（木）

辻小学校2年生　堀川体験学習
平成24年6月4日（月）

名北小学校3年生　清掃活動
平成24年6月4日（月）

清水小学校2年生　堀川体験学習
平成24年6月12日（火）

大杉小学校2年生　堀川体験学習
平成24年6月14日（木）

名北小学校3年生　堀川学習会
平成24年6月15日（金）

主催・協力・報告
黒川ドリーム会、御用水跡街園愛護会調査隊
河川計画課調査隊、事務局

11. Progress of Citizen's Awareness – Activities of Studies

笹島小学校5年生　堀川観察会
平成24年6月25日(月)

名北小学校3年生　堀川観察会
平成24年6月28日(木)

支援センターなないろ　堀川探検隊
平成24年6月28日(木)

八熊小学校3年生　堀川観察会
平成24年6月29日(金)

笹島小学校の親子・近所の親子　川遊び
平成24年7月28日(土)

清水小学校の親子　川遊び
平成24年7月30日(月)

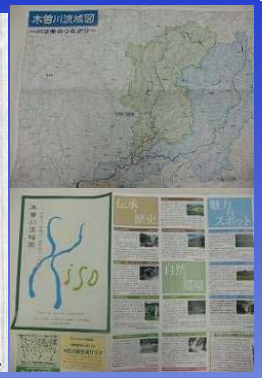
夏休み親子堀川観察会
平成24年8月17日(金)

八熊小学校5年生　納屋橋空心菜の観察
平成24年7月5日(木)

主催・協力・報告
黒川ドリーム会、御用水跡街園愛護会調査隊
河川計画課調査隊、事務局

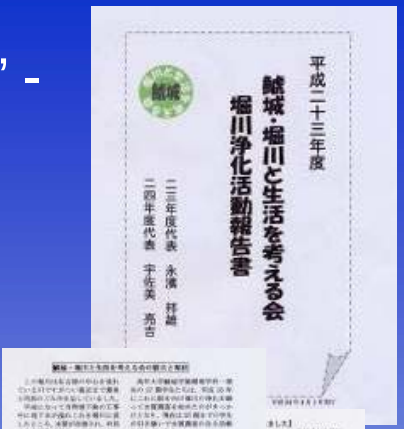
Progress of Citizen's Awareness
- Activities of "Free Survey Groups" and "Cheering Groups" -

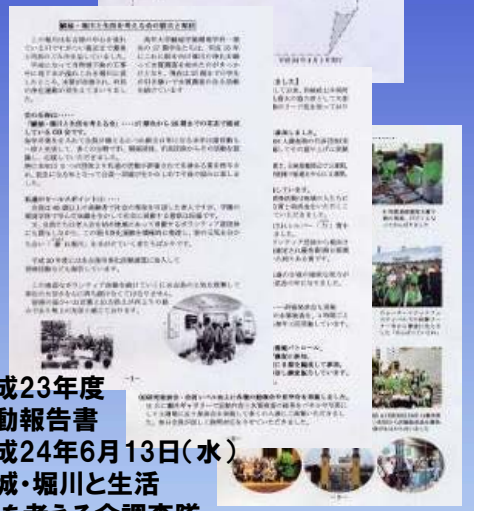
中日新聞
平成24年1月19日(日)
朝刊



木曽川流域図制作
水源の里を守ろう
木曽川流域みん・みんの会
報告:事務局

第3回 メーク・ア・チェンジ・デー 優秀賞受賞
平成24年2月4日(土)
鯱城・堀川と生活を考える会 報告:事務局





平成23年度
活動報告書
平成24年6月13日(水)
鯱城・堀川と生活
を考える会調査隊

活動報告 平成24年6月29日付
「上流は下流を思い、下流は上流に感謝する」
水源の里を守ろう 木曽川流域みん・みんの会

堀川ギャラリーで研究成果発表
平成24年1月31日(火)～2月19日(日)
名古屋市高年大学環境学科25期調査隊
「堀川を清流に 9年間を観る 写真とデータ」
報告:事務局

堀川浄化作戦 黒川樋門にてEM菌を800L投入
編成24年3月14日(水)
堀川EMクラブ 報告:御用水跡街園愛護会調査隊

第3回 伊勢湾・三河湾・堀川をきれいにしよう!
全国一斉EM団子・EM活性液投入イベント
平成24年7月16日(月・祝)
参加:堀川1000人調査隊 他約220名
報告:御用水跡街園愛護会調査隊

金環日食 堀川一斉調査
平成24年6月6日(水)
調査日:5月21日(月)
鯱城・堀川と生活
を考える会22期調査隊
北清水橋付近での
調査レポート

Progress of Citizen's Awareness
- Activities of "Free Survey Groups" and "Cheering Groups" -

活動レポート（平成23年9月～平成24年2月）明電舎錦調査隊

堀川調査隊 明電舎錦調査隊 水質データ
調査場所：錦橋

調査日時	現場気温 ℃	表層水温 ℃	表層溶存酸素 mg/L	表層導電率 mS/cm	水温 ℃ pH計	pH pH計	CODMn(T) mg/L 簡易比色	CODMn(S) mg/L 簡易比色	NH4-N mg/L 簡易比色	NO2-N mg/L 簡易比色	NO3-N mg/L 簡易比色	全窒素 mg/L 簡易比色	溶解性窒素 mg/L 簡易比色	全りん mg/L 簡易比色	溶解性りん mg/L 簡易比色
2010/4/14					18.1	6.643	12.5	19.5	2.8	0.4	0.3		4.0		0.0
2010/4/28					16.1	6.673	15.5	13.5	4.8	0.4	0.6		6.5		0.3
2010/5/12					21.9	6.67	16	14	3.6	0.2	0.5		4.7		0.5
2010/5/26					20.8	6.467	15.5	12	3.1	0.2	0.5		4.3		0.2
2010/6/9					27.9	6.708	17.5	15.5	5.8	0.5	1.1		8.1		1.0
2010/6/24					24.8	6.608	13.5	11.5	1.8	0.2	0.6		3.6		0.1
2010/7/7					26.6	6.627	16	15.5	3.9	0.3	0.9		5.8		1.0
2010/7/21					25.8	6.586	7	7.5	3.7	0.2	0.9		5.6		0.3
2010/8/4					25.8	6.691	7	4	3.2	0.1	0.4		5.1		0.2
2010/8/25					23.2	6.69	11.5	8.5	3.8	0.1	0.7		5.2		0.4
2010/9/22					25.9	6.78	11.5	5.5	4.1	0.1	0.1		3.7		0.0
2010/9/29					20.8	6.61	3.5	3	1.6	0.1	0.6		2.0		0.0
2010/10/13					19.4	6.67	15	7	2.3	0.1	0.7		2.7		0.0
2010/10/27					20.2	6.92	10.5	10	3.7	0.2	0.8	4.8	4.4	0.5	0.2
2010/11/10					19.8	6.77	5.5	5.5	4.5	0.1	0.4	3.8	3.4	0.1	0.0
2010/11/24					20.7	6.82	7.5	5	3.1	0.1	0.5	3.8	3.5	0.3	0.0
2010/12/8					21.6	6.78	9	8.5				5.0	4.5	0.3	0.1
2011/1/12							7.6					7.66		0.29	
2011/1/26							11.0					6.0		0.2	
2011/2/9							11.5					6.8		0.7	
2011/2/23					11.8	6.7	7.0					5.7		0.5	
2011/3/9					15	6.7	9.5					7.2		0.4	
2011/3/23	8.5	13.6	4.82	12.98	12.7	6.9	10.0					4.1		0.2	
2011/4/13	15.5	16.8	5.1	4.85	15.9	6.9	15.0					9.4		1.3	
2011/4/27	21.5	18.2	5.15	3.03	20.2	7.1	10.5					6.4		0.8	
2011/5/18	22	20.5	4.8	4	18.3	6.9	11.5					6.0		0.6	
2011/5/25		19.2	3.7	1.05	18.3	6.6	10.5					4.6		0.4	
2011/6/9	25	22.1	5.45	3.93	20.5	6.9	8.5					3.3		0.2	
2011/6/22	28	23.7	2.54	3.02	24	6.886	7.5					3.0		0.3	
2011/7/13		27	2.54	2.094	21.6	6.93	10.4					6.4		0.4	
2011/7/27	29.5	25.7	3.17		25.3	6.77	7.1					6.1		1.1	
2011/8/10	34	27.7	3.08		22.3	6.35						6.2		0.5	
2011/8/24	29	26	1.38	20.9	23.4	6.815	7.5					5.4		0.7	
2011/9/14	33	26.5	3.23	1440	24.7	7.0	9.1					5.94		0.132	
2011/9/28		23.9	2.1	5.8	23.7	6.564	5.7					4.81		0.268	
2011/10/12	19	22	2.84	8.41	21.2	6.777	7.4					4.9		0.401	
2011/10/26	17	20.7	2.83	2.92	22.3	6.948	10.3					3.63		0.384	
2011/11/9	16	20.3	2.61	12.55	20.4	6.878	13.5					4.14		0.551	
2011/11/22	9	16.4	4.28	5.55	18.2	6.951	6.3					4.36		0.518	
2011/12/7	10	16.4	3.7	9.8	21.2	7.0	測定できず	測定できず				3.8		0.3	
2011/12/21	5	14.9	5.38	7.72	18.9	7.1	測定できず					6.2		0.2	
2012/1/11	6	12.4	5.0	19.6	16.3	7.1	25.8					4.6		0.3	
2012/1/25	2.5	11.6	5.7	12.7	15.3	7.0	15.2					3.5		0.407	
2012/2/8	5	9.5	7.2	8.2	測定できず	測定できず	測定できず					測定できず		測定できず	

この期間の平均値：11.59mg/L

この期間の平均値：9.39mg/L

夏場のDOが低くなっている。時期的に水温が上昇し、微生物、藻類の活性が高くなり、酸素の要求量は高くなります。微生物の酸素消費もありDOが低くなっていると考える。

導電率の変化は雨や潮位の影響と考える。

pH値が中性となってきている。

CODが低くなってきている。

堀川上流部散策 報告書
平成24年7月23日（月）
WBP堀川応援隊

観光活用策考える
木曽三川クルーズ

揖斐川、長良川

木曽三川沿いの史跡などを巡って観光活用策を考えようという「木曽三川クルーズ」が十四日、岐阜、三重両県内の揖斐川と長良川で開かれた＝写真。国土交通省木曽川下流河川事務所が、弥富市や岐阜県海津市、三重県桑名市など東海三県の流域市町の職員や観光業者ら計四十人を招待して開いた。

参加者は桑名市の桑名港からジェット船に乗って二時間、約二十㌔の船旅を体験。自治体の観光担当者らから説明を受けながら、七里の渡し（桑名市）や千本松原（海津市）などの名所を船窓から見た。

その後、海津市の木曽三川公園長良川サービスセンターで意見交換会があり、旅行業者が「普段とは違う景色が目新しい」「移動時間の活用が課題」などと感想を述べた。同事務所の浅野和広所長は「流域の自治体が連携すれば、さらなる活性化につながる」と話した。

中日新聞
平成24年3月16日金）朝刊

歩いて巡る
熱田の史跡

市民グループ「ぐるりんマップ」完成

伝説や和歌交え5コ

中日新聞
平成24年4月22日（木）
朝刊

Progress of Citizen's Awareness
- Activities of "Free Survey Groups" and "Cheering Groups" -

水質測定結果　　岐阜県立恵那農業高等学校　環境科学科

日時	平成24年(2012年) 6月 22日 金曜日　15時 16分
場所	名古屋市の堀川 納屋橋下 [illegible]
測定者	岐阜県立恵那農業高等学校 環境科学科 [illegible]
試験器	■ [illegible] ■ WQC-22A □ パックテスト

	単位	パックテスト測定範囲	測定範囲	測定値 上層	測定値 下層
気温	℃			32.3	32.3
水温	℃			22.7	22.6
水深	cm				
pH			0~14	6.6	6.2
アンモニア態窒素 (NH4-N)	mg/l	0.2~10	0~0.50	0.60	
亜硝酸性窒素 (NO2-N)	mg/l	[illegible]	[illegible]	[illegible]	
硝酸性窒素 (NO3-N)	mg/l	1~45	0~30	4.60	
リン酸 (PO4-P)	mg/l	0.2~10	0~2.5	1.25	
化学的酸素要求量 COD	mg/l	0~100			
溶存酸素 DO	mg/l		0~20	0.32	0.30
電気伝導率 COND	S/m		0~1	22.1	22.8
塩分濃度 NaCl	%		0~4	0.110	0.011
濁度 TURB	mg/l		0~1000	14	18
生物調査	エビ2種 [illegible]				
備考	[illegible] 13:38 NP 0.23m [illegible]				

測定値 H23.10.19	測定値 H24.6.22
15:00	
27.0	32.3
22.6	22.8
199	
6.34	6.2
0.40	0.30
2.41	22.8
1.25	0.011
47	18
15:32 NP 1.42m	13.38 NP 0.23 m

空心菜を使った堀川の浄化実験
平成24年6月22日(金)開始
主催:恵那農業高等学校+名古屋堀川ライオンズクラブ　報告:事務局

堀川ギャラリー
「蝶番式ゲート水門」を使っての
堀川浄化・展示会開催
平成6月5日(火)~24日(日)
鯱城・堀川と生活を考える会調査隊
25期 近藤佑輔氏

「七里の渡し」復活検討

名古屋市と中部運輸局

定期運航へ組織設立

東海道唯一の海路だった「七里の渡し」の復活に向け、名古屋市と中部運輸局は18日、有識者、経済団体などとともに検討組織「水上交通網推進プラットフォーム」を設立した。定期運航できるかを検討した上で、16年をめどに航路を整備し、観光客誘致を狙う。

東京・日本橋から京都・三条大橋までの五十三次(約500㌔)ある東海道のうち、現在、当時の道をたどれない状態なのは、七里の渡しの部分だけ。「全行程をたどりたい」という観光客の要望で、これまで名古屋市の市民団体「ゴンドラと堀川水辺を守る会」などが不定期で遊覧船を運航していた。定期運航について検討されるのは、今回が初めて。

河村たかし名古屋市長は、名古屋駅と名古屋港を結ぶ中川運河、市中心部を流れる堀川などを結んだ「水上交通プロジェクトチーム」を既に設置しており、今後は同プラットフォームと連携しながら構想を具体化する方針。【三木幸治】

七里の渡し　「宮宿」(名古屋市熱田区)と「桑名宿」(三重県桑名市)を結んだ海路。距離が7里(約28㌔)あったことから名付けられた。当時は宮宿、桑名宿とも、東海道を行き来したり伊勢参りなどの人々でにぎわった。

毎日新聞
平成24年6月19日(火)朝刊

七里の渡し 体験

熱田―桑名 市長と検討会委員

熱田区と三重県桑名市を結んだ東海道の航路「七里の渡し」復活に向け、河村たかし市長と外部の検討会委員らが十一日、船で桑名へ渡る体験をした。

市は中川運河や堀川を含め、不定期航路の充実や定期航路化を目指すプロジェクトチームを二月につくった。

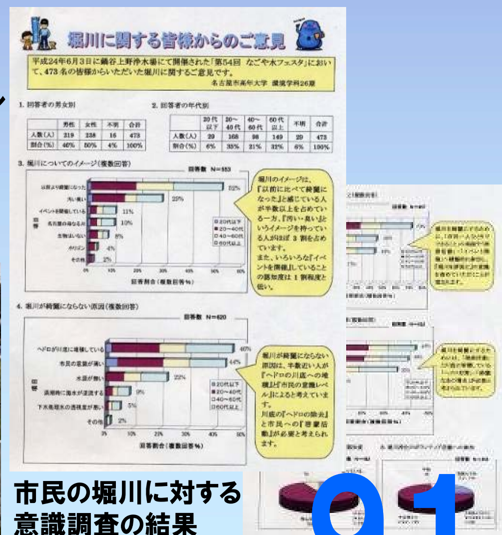
今月三日には、NPO法人や国などを交えた外部検討会「水上交通網推進プラットフォーム」を設立している。

この日は国土交通省の巡視艇で、熱田神宮の南東にある宮の渡しを出発し、一時間半かけて桑名港を目指した。河村市長は出発前、「ここがほんまもんの名古屋。盛り上げないかん」と語り、宮の渡し周辺の活性化に意欲を見せた。(中崎裕)

七里の渡しなどを視察するため船に乗り込む河村たかし市長ら＝熱田区の宮の渡し公園で

中日新聞
平成24年7月12日(木) 朝刊

第54回　なごや水フェスタ
(鍋屋上野浄水場開放デー)
平成24年6月3日(日)
堀川1000人調査隊が堀川浄化をアピール
参加:名古屋市高年大学
環境学科26期調査隊
名古屋グランパス調査隊
名古屋堀川ライオンズクラブ調査隊



堀川に関する皆様からのご意見

平成24年6月3日に鍋屋上野浄水場にて開催された「第54回 なごや水フェスタ」において、473名の皆様からいただいた堀川に関するご意見です。
名古屋市高年大学 環境学科26期

市民の堀川に対する
意識調査の結果
名古屋高年大学
環境学科26期

Progress of Citizen's Awareness
- Activities of "Free Survey Groups" and "Cheering Groups" -

環境大臣から
地域環境美化功績者を受賞　黒川ドリーム会
平成24年1月24日(火)
報告:事務局

横断幕 新調
平成24年3月14日(水)
協力:黒川ドリーム会、鐵牛応援隊、クロス技研応援隊

矢野きよ実氏・河村市長 堀川応援隊入隊　平成24年2月4日(土)
報告:御用水跡街園愛護会調査隊

写真家 浅井慎平氏堀川応援隊入隊　平成24年5月10日(木)
報告:御用水跡街園愛護会調査隊

なごや北ホームニュース
平成24年3月24日(土)

堀川ギャラリー「ホリゴンのひみつ」展
主催:小林喜春(こばやし・よしはる)氏

定点観測・清掃活動
中日本建設コンサルタント(株)
かわせみ調査隊、かもめ応援隊
平成24年6月20日(水)

清掃活動
生活支援センターなないろ・ロマン黒川
平成24年2月17日(金)・4月17日(火)
報告:御用水跡街園愛護会調査隊

清掃活動　春の堀川一斉大そうじ
平成24年4月21日(土)
主催:クリーン堀川
報告:御用水跡街園愛護会調査隊、事務局

Progress of Citizen's Awareness
- Activities of "Free Survey Groups" and "Cheering Groups" -

清掃活動
春の環境デーなごや
平成24年6月2日(土)
北清水親水広場付近
主催:黒川ドリーム会 約220名

なごや北ホームニュース
平成24年6月23日(土)

中日新聞
平成24年7月15日(土)

鯱城・堀川清掃大作戦
本日集めた"ゴミ"の量
平成24年7月14日

拠点名	可燃ごみ	不燃ごみ	計
第1拠点	9	7	16
第2拠点	14	4	18
第3拠点	10	15	25
第4拠点	44	12	56
第5拠点	12	8	20
第6拠点	20	3	23
第7拠点	25	12	37
合 計	134	61	195

清掃活動 鯱城・堀川清掃大作戦
平成24年7月14日(金)
実施:名古屋市高年大学鯱城学園
鯱城学園OB鯱城会
鯱城学園学生会 約770名
報告:御用水跡街園愛護会調査隊

読売新聞
平成24年6月16日(土) 朝刊
清掃活動
鯱城・堀川と生活を考える会
イーツーワン(環境21期会)

春の環境デーなごや2012
平成24年6月2日(土)
堀川体験乗船
協力:名古屋堀川ライオンズクラブ
主催:名古屋市環境局

清掃活動
平成24年6月9日(土)
ぎふしんムーミン清水支部堀川応援隊

活動レポート
環境ボランティアサークル
「亀の子隊」

Progress of Citizen's Awareness –Events–

第5回　木曽三川がつなぐ山とまちインターネットフォーラム
企画・実施：NPO法人たからのやま久瀬
堀川1000人調査隊2010実行委員会
平成24年3月25日（日）
報告：事務局


新聞　2012年(平成24年)3月26日　月曜日

木曽三川がつなぐ絆

揖斐川町と名古屋の住民が交流

山菜や鮎　郷土料理に舌鼓

岐阜新聞　平成24年3月26日（月）

「おいしい」「また来たい」

木曽三川 住民ら揖斐川で交流

よもぎ餅を改って試食する参加者ら＝揖斐川町西津汲の久瀬公民館で

木曽三川の上流と下流の住民による交流会「第五回木曽三川がつなぐ山とまちインターネットフォーラム」が二十五日、揖斐川町西津汲の久瀬公民館であった。約百八十人が久瀬地区名物の試食などで親交を深めた。

名古屋市民や同市などでつくる実行委員会、同市の市民団体「堀川1000人調査隊」、地元のまちづくり団体「NPO法人たからのやま久瀬」が主催。川を通じて地域の魅力に触れようと二〇〇八年から開いており、揖斐川町では初めて。

試食では、よもぎ餅や地獄うどんが人気を集め、意見交換会では名古屋の参加者から「地獄うどんがおいしい。全国区でもいけるのでは」「よもぎ餅の香りがいい」などの声が上がった。

同市天白区から参加した岡本真央さん(三二)は「水がきれいで山の地形が安定しており、今後発展しそうな地域。食事もおいしいし、夏また来たい」と話していた。（加藤拓）

中日新聞　（岐阜総合版）　平成24年3月26日（月）朝刊

黒川友禅流し　平成24年4月7日（土）
報告：御用水跡街園愛護会調査隊
事務局

Progress of Citizen's Awareness –Events–

堀川フラワーフェスティバル2012
開催：平成24年5月11日（金）～26日（土）


堀川にチョウ呼び込め

来月のフラワーフェス 新たな目玉

栄小児童が草花植える

中日新聞
平成24年4月27日（金） 朝刊
名古屋市立栄小学校児童


船上挙式 清らかに

フラワーフェス 開幕

お得な堀川 召し上がれ

中日新聞　平成24年5月12日（土） 朝刊


堀川で中学生550人大合唱

フラワーフェス 錦橋―納屋橋に並び

中日新聞　平成24年5月13日（日） 朝刊


堀川幻想

熱田 宮の渡しにまきわら船

中日新聞
平成24年6月3日（日） 朝刊





市民参加によるハンギングバスケット作り
平成24年4月20日（金）


オープニングイベント
堀川の水面上で「ゴンドラ・ウェディング」
平成24年5月11日（金）


流域住民「ふさわしい文化遺産を」

堀川を舞台に新作狂言

中日新聞　平成24年7月28日（土） 朝刊

堀川を舞台に新作狂言
名古屋堀川ライオンズクラブ調査隊

報告：御用水跡街園愛護会調査隊

Progress of Citizen's Awareness –Events–

第8回堀川エコロボットコンテスト
平成24年8月26日(日)
主催:名古屋工業大学・名古屋堀川ライオンズクラブ
24台のロボットが出場　参加者約200名

MEMO