

# Challenges in Marine Environment Management in Tokyo Bay

Dr. Keita Furukawa, OPRI/SPF, COSIE/YNU

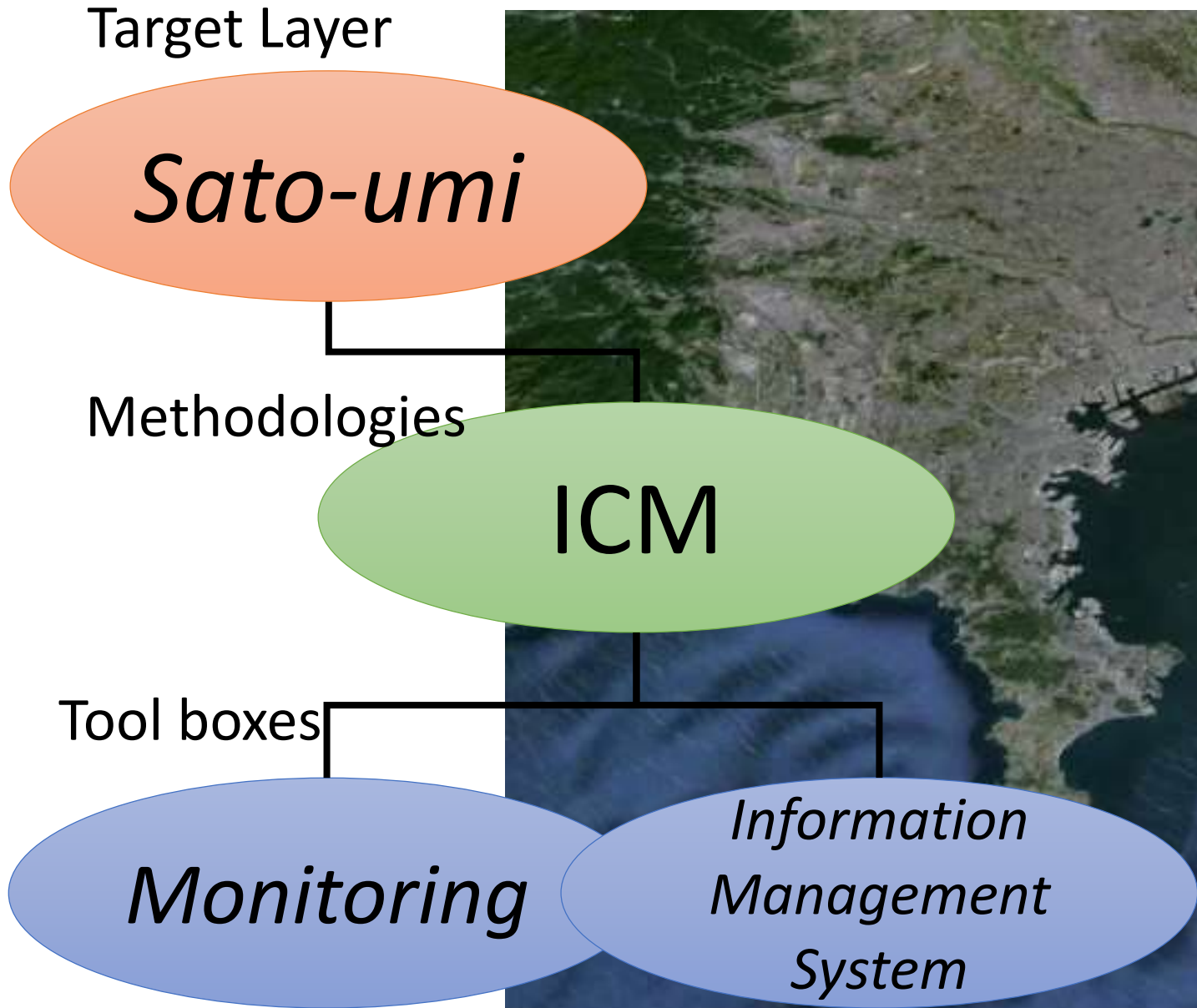


Dr. Keita Furukawa



Image Landsat  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Image IBCAO

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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Title

Back Grounds

Goal settings

Implementations

Lessons leant



Sushi



Tempura



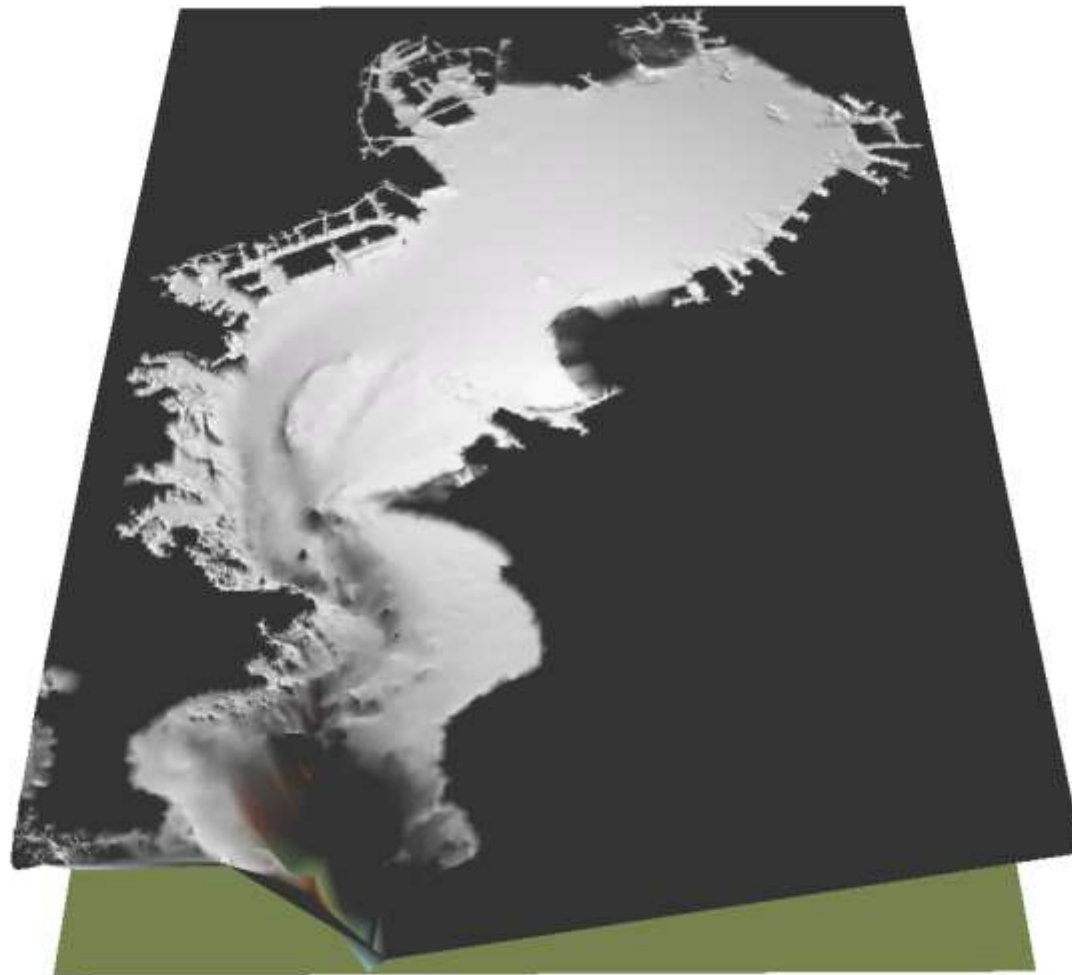
# Edo-Mae: Originated in Tokyo Bay, Harvest of *Sato-umi*



Photo by T. Hayashi, Chiba Museum

Superpose of geographical map of 1800s and fisheries zone map of 1908

# Tokyo Bay



50 km x 20 km of surface, 15 m depth, Open to Pacific Ocean  
7,500 km<sup>2</sup>, 26 Coastal cities, 26 million people, 1/3 industries

# Tokyo Bay at Present

- Center for Economic Activities



# Tokyo Bay at Present

- Hub of Waterborne Transport



# Tokyo Bay at Present

- Human Use and Conservation of Nature



# Environmental Hazards of Tokyo Bay



Photo by Prof. Ishimaru, TUMST

Red tide (Algal bloom)



Photo by KRT, MLIT

Blue tide (Anoxic Water Upwelling)



Photo by Mizuo, Yokohama City Institute for Env. Res.

Fish Kill on 2003 (due to Anoxic Water)



Title	Back Grounds	Goal settings	Implementations	Lessons leant
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## Action Plans for Bay Renaissance



The Committee  
(Decision Maker)

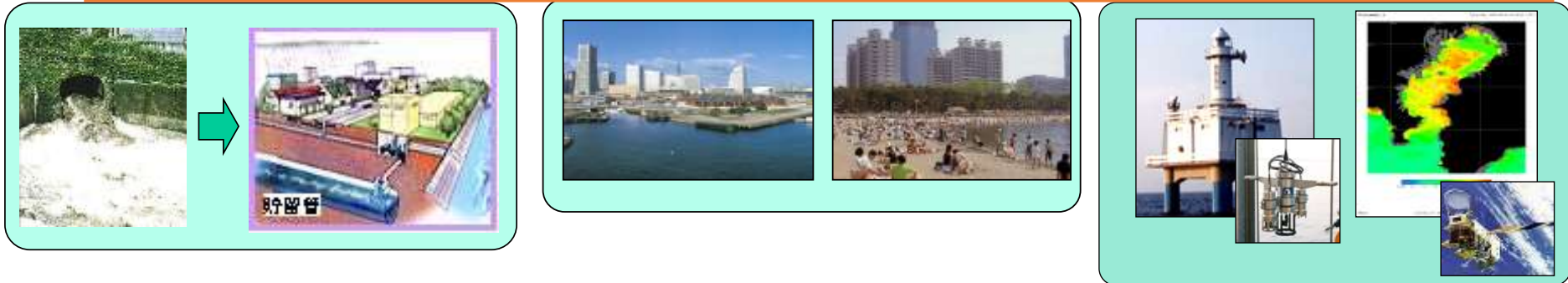
Represented by  
Managers of  
Ministries  
Governments (30)



Secretariat of the Committee

Represented by  
Section Chief of  
Related Bureau (30)

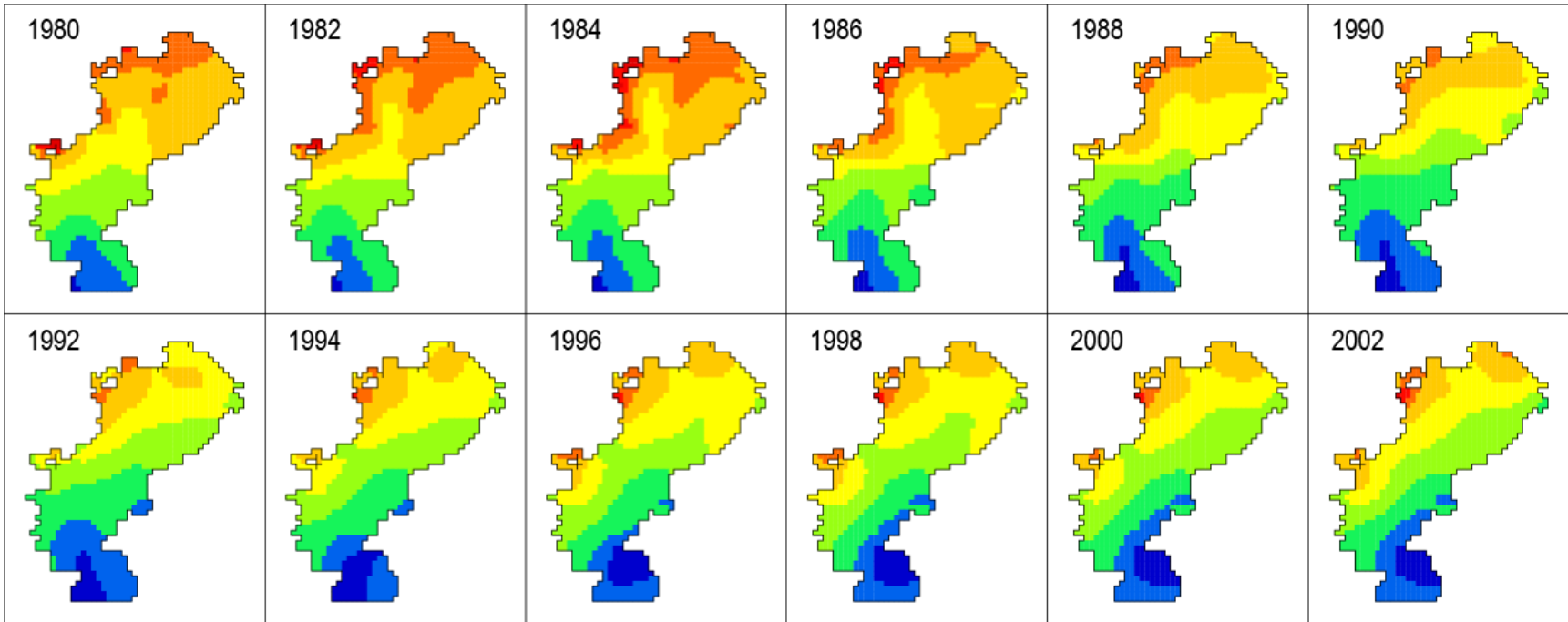
**Goal: Restore the beautiful coastal environment for enabling pleasant use and sustaining biodiversity as a wealth of capital.**



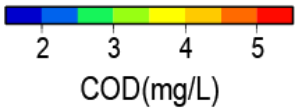
**Project started 28th March 2003 as 10 years action plan**

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG1: Land**

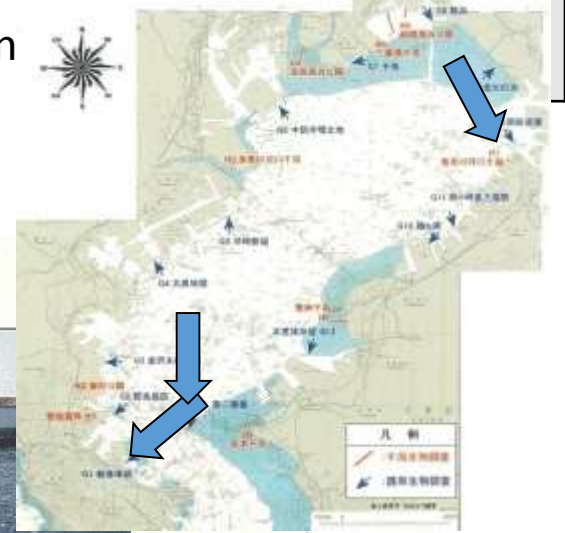


Long term trend of COD (surface layer)

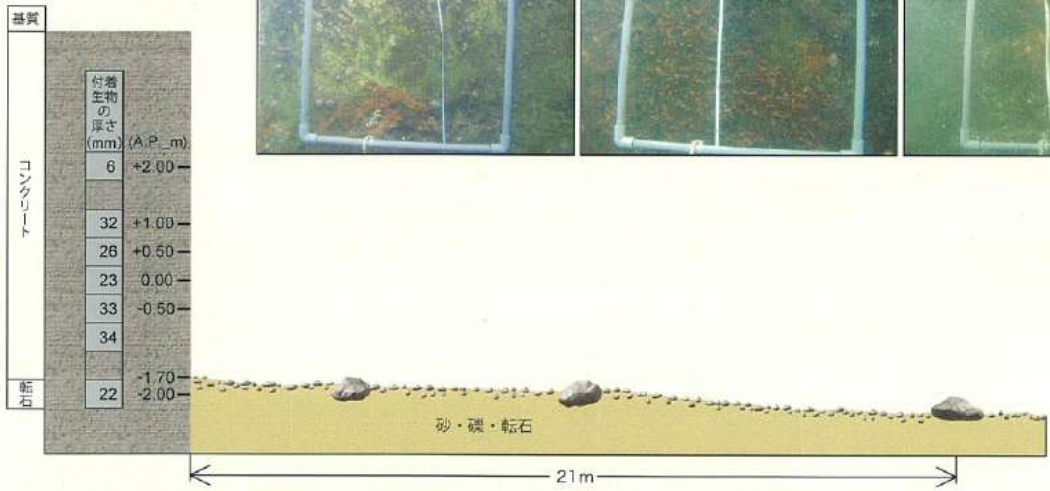
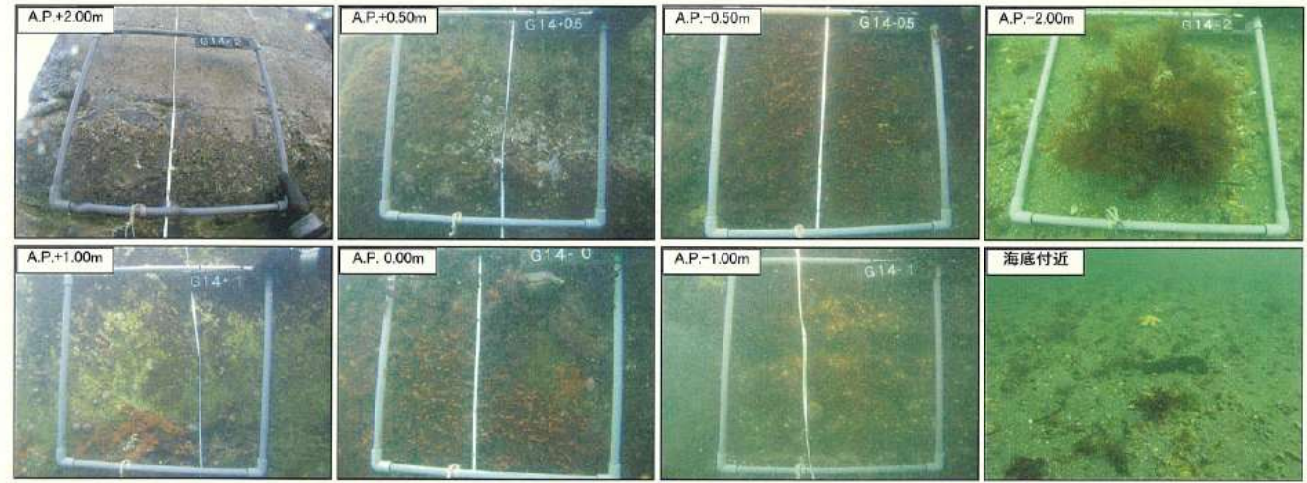
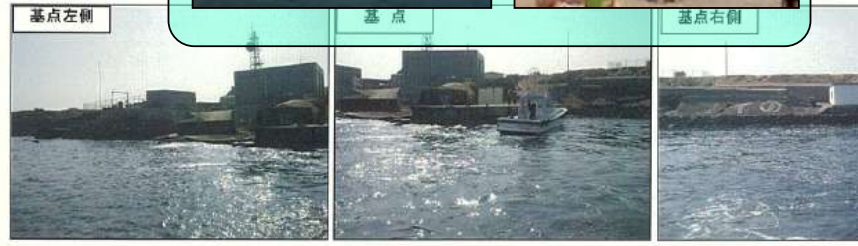


Title	Back Grounds	Goal settings	Implemen
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**WG2: Sea**



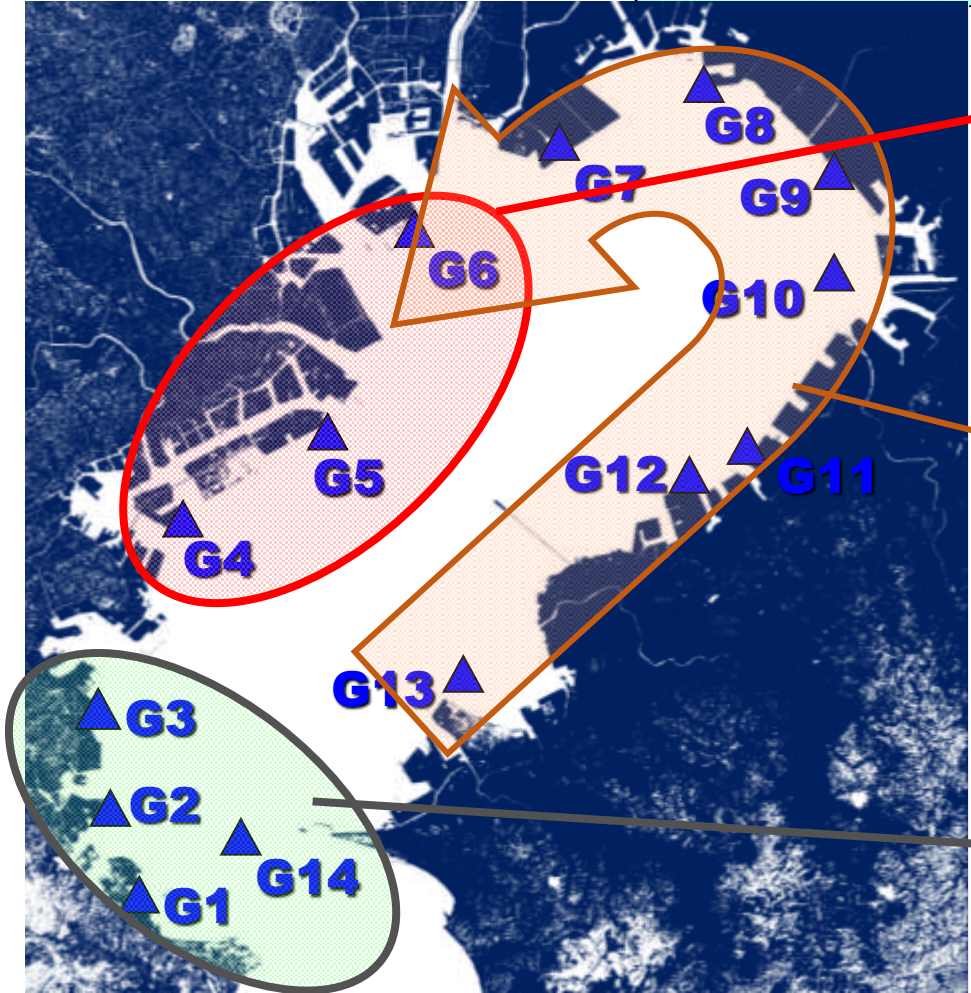
調査地点	G14
場所名	第二海堡
調査日時	平成18年3月8日 8:40
潮位	A.P.+151cm
緯度経度	35° 18.734' 139° 44.503'



Igarashi & Furukawa (2006)

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG2: Sea**



Poor Biodiversity

Declease Biodiversity  
Counter Clockwise

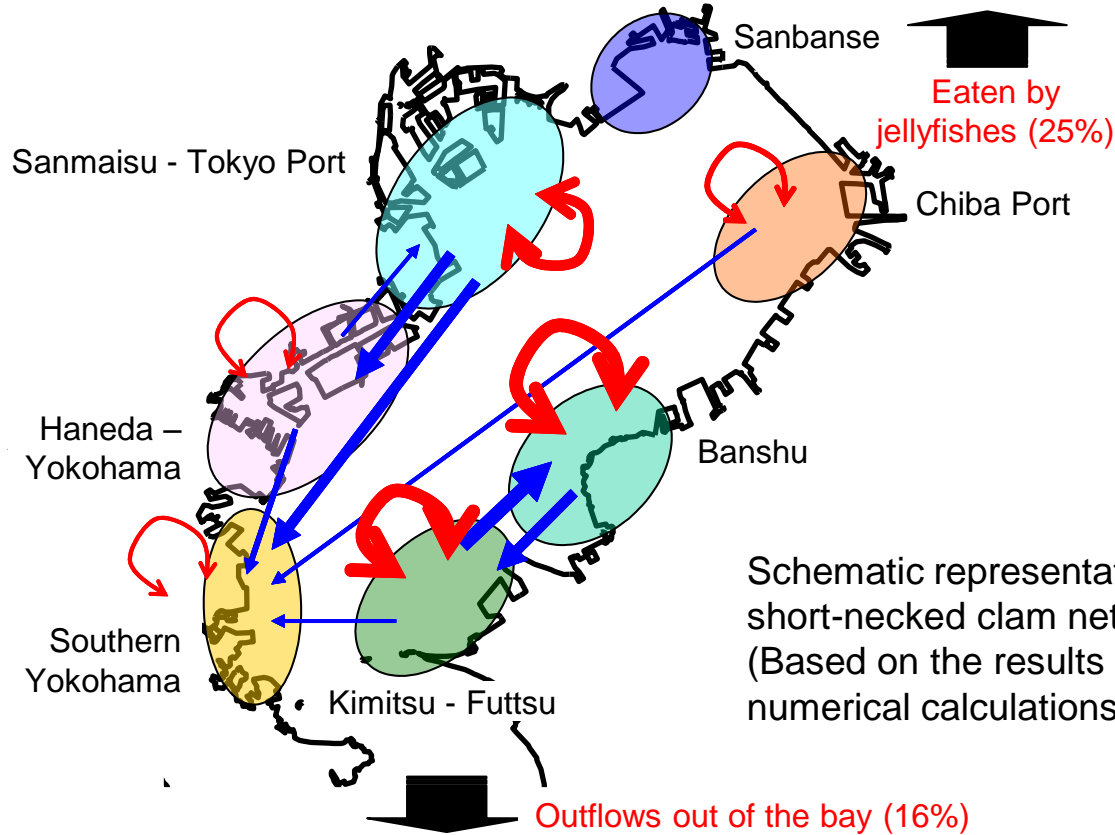
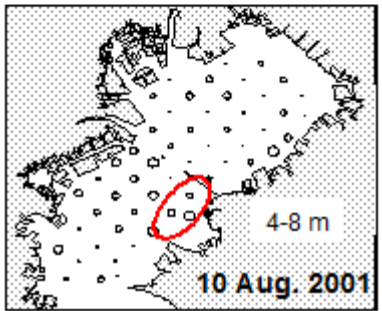
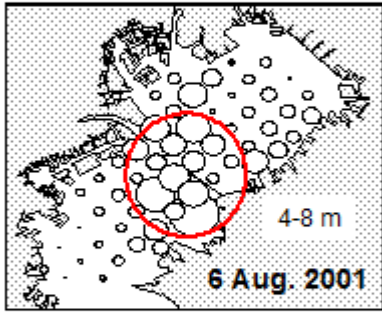
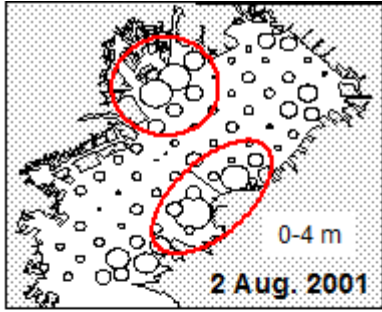
Rich Biodiversity

Sessile Distribution

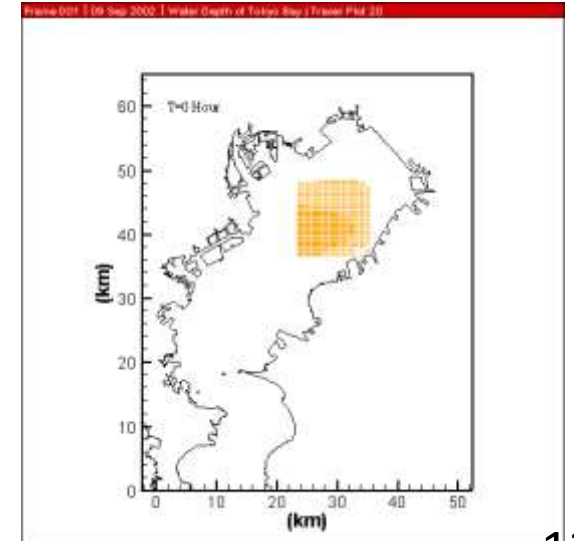
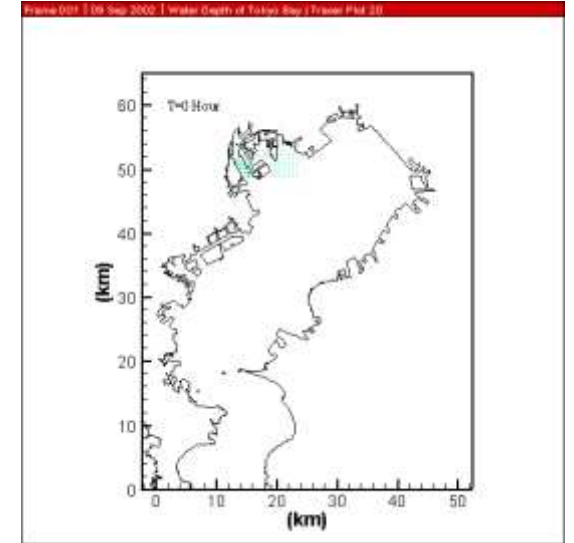
Igarashi & Furukawa (2006)

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG2: Sea**



Schematic representation of short-necked clam networks (Based on the results of numerical calculations)



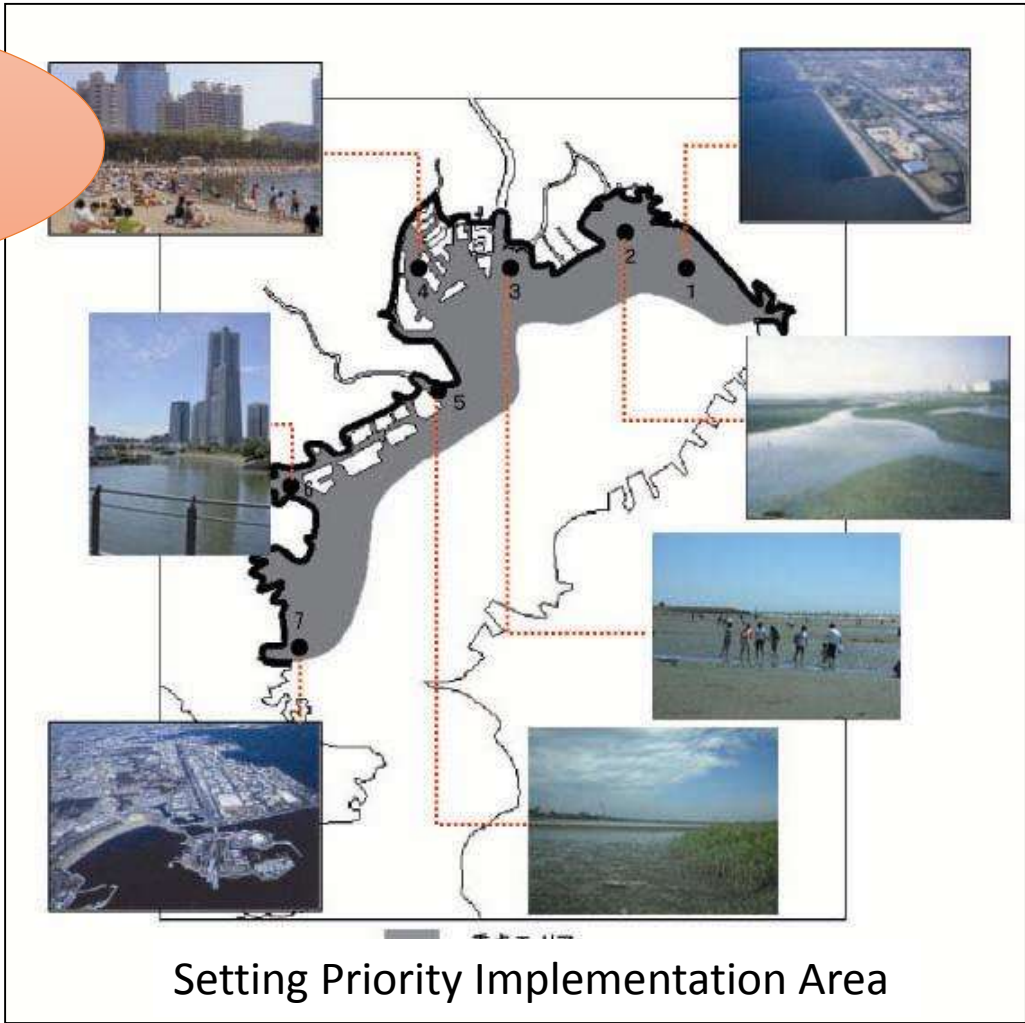
**Ecosystem Network of Short-Necked Clam**

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG2: Sea**

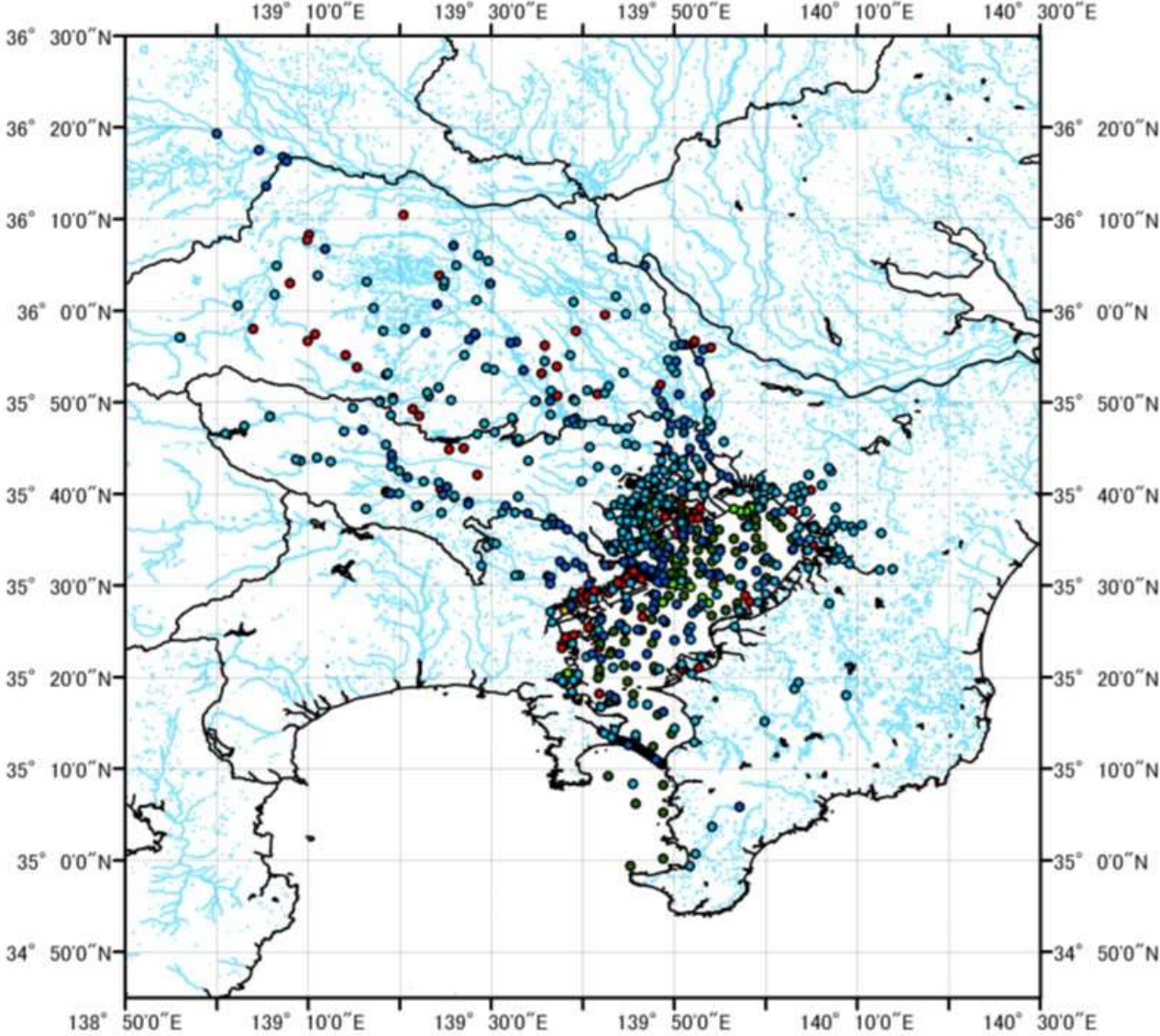
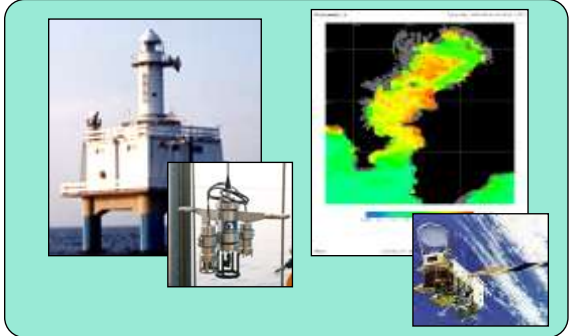


*Sato-umi*



Title	Back Grounds	Goal settings	Implementations	Lessons leant
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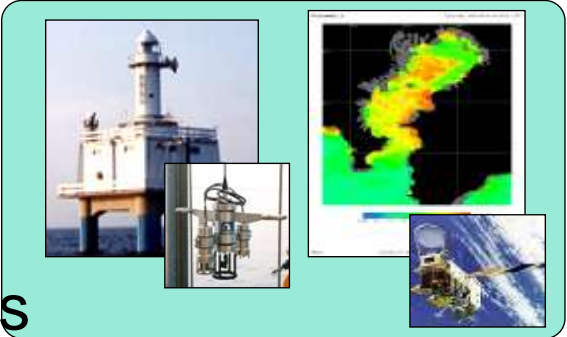
**WG3: Monitoring**



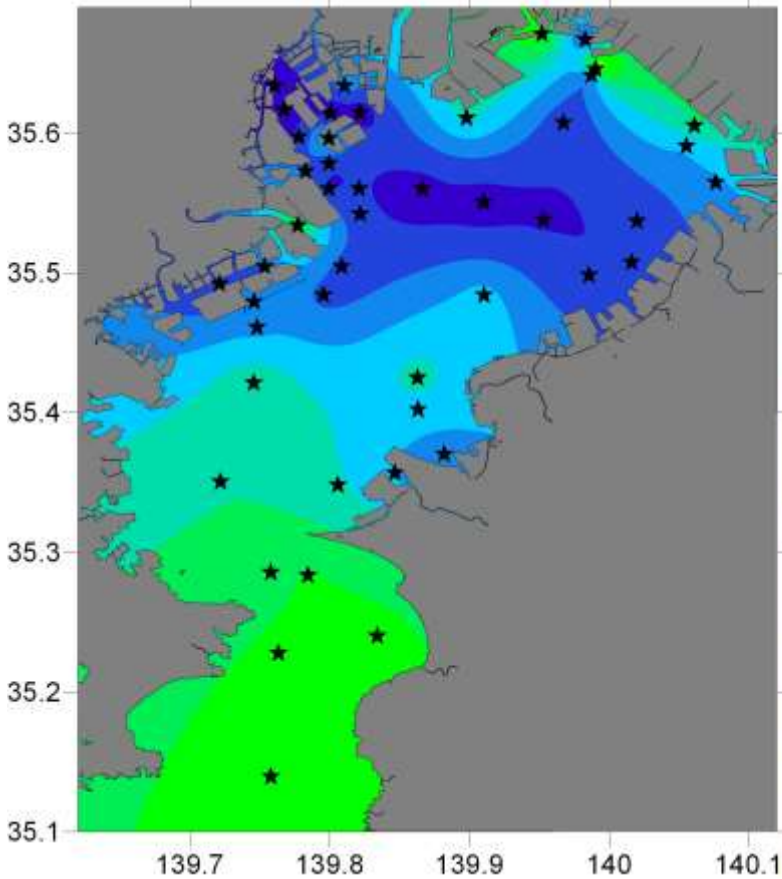
Monitoring  
Champaign  
Since 2008

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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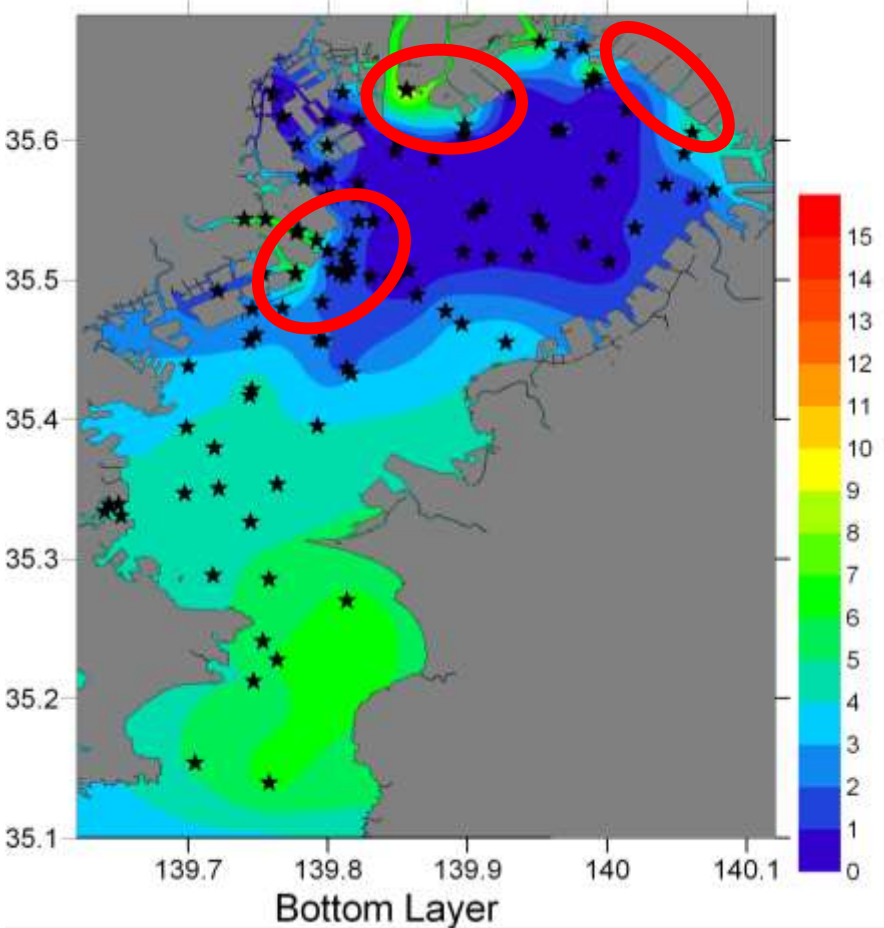
**WG3: Monitoring**



101 Points



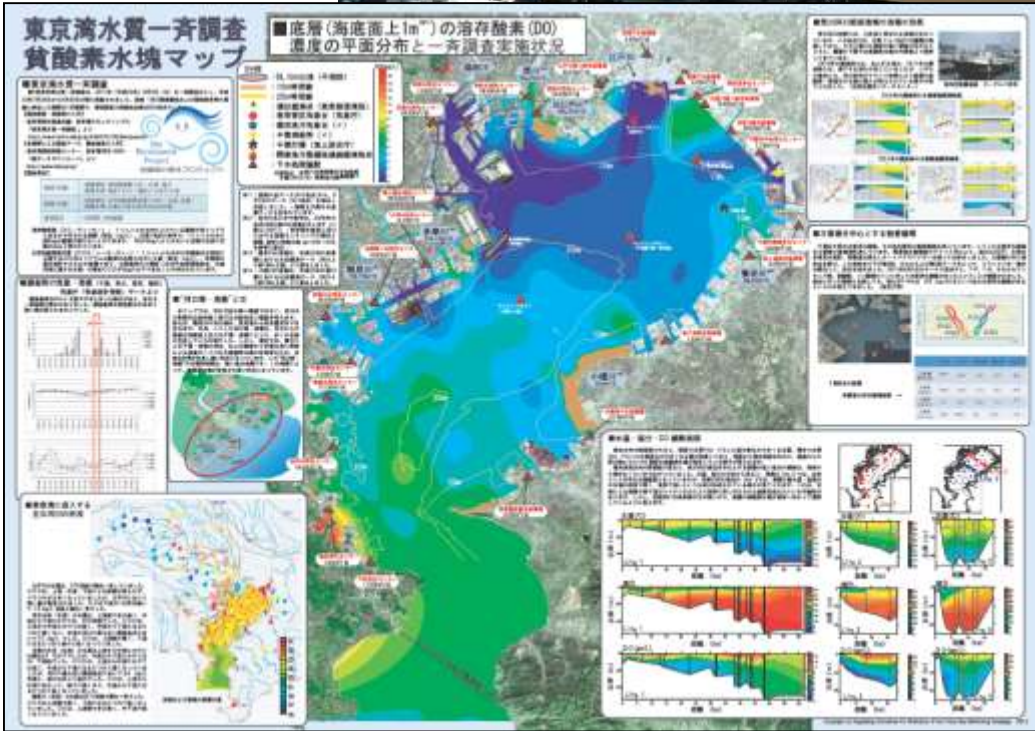
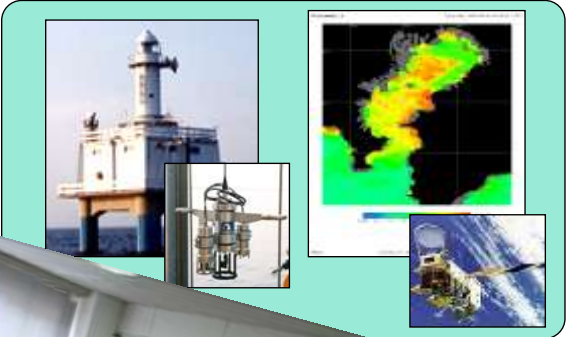
222 Points





Title	Back Grounds	Goal settings	Implementations	Lessons leant
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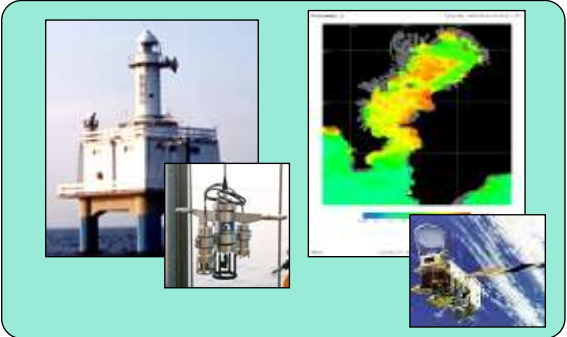
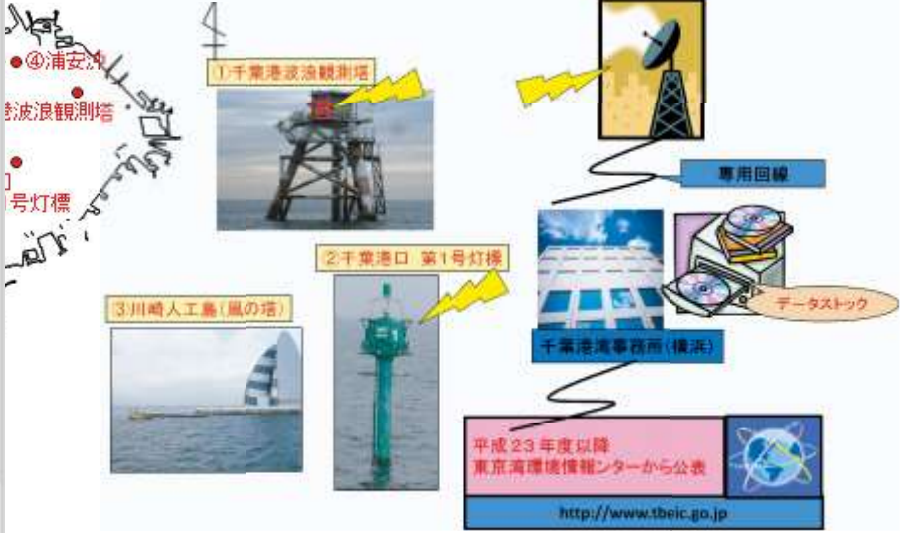
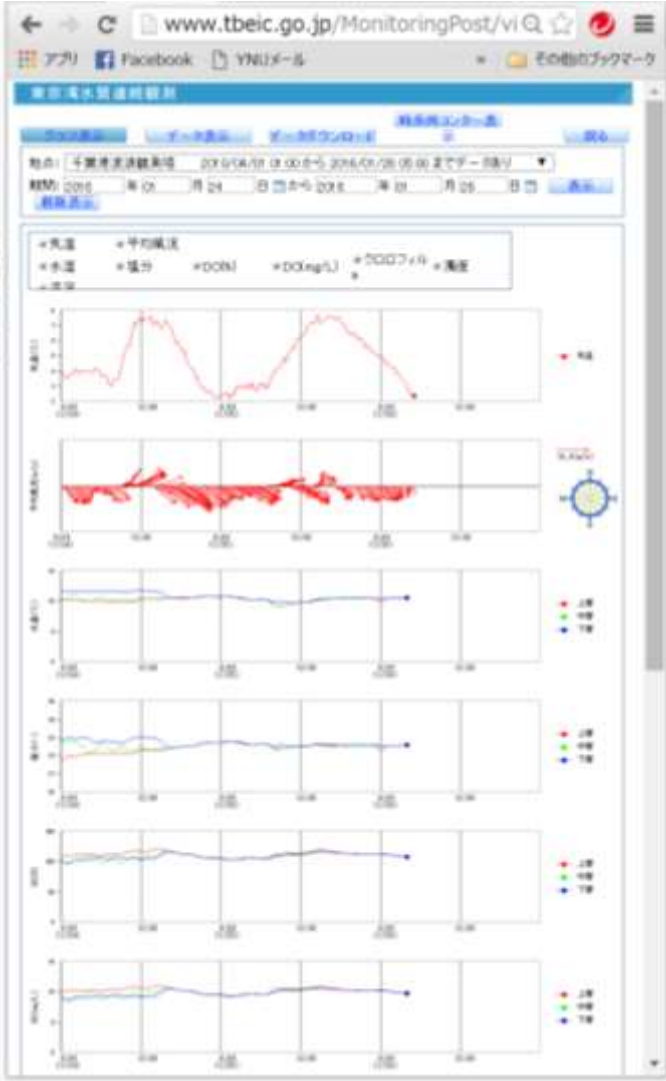
**WG3: Monitoring**



Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG3: Monitoring**

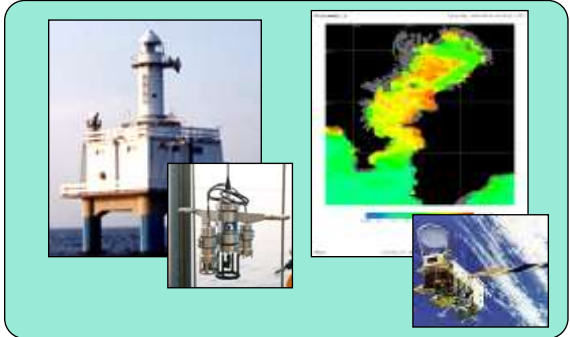
# Tokyo Bay Environment Information Center (www.tbeic.go.jp)

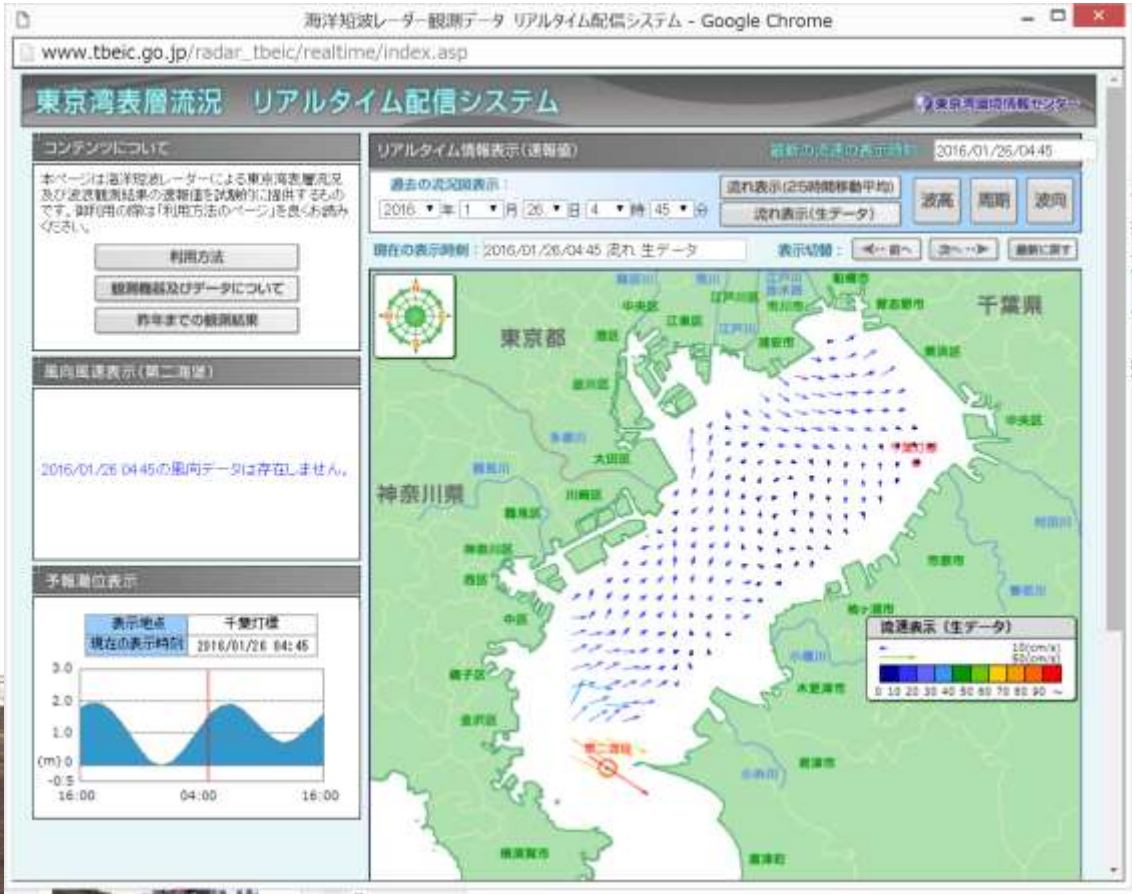
Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG3: Monitoring**

Tokyo Bay Environment Information Center

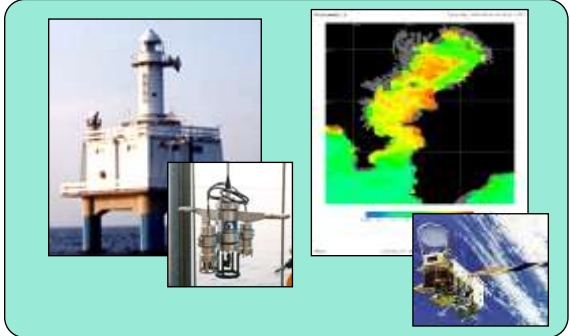


Oceanographic Radar

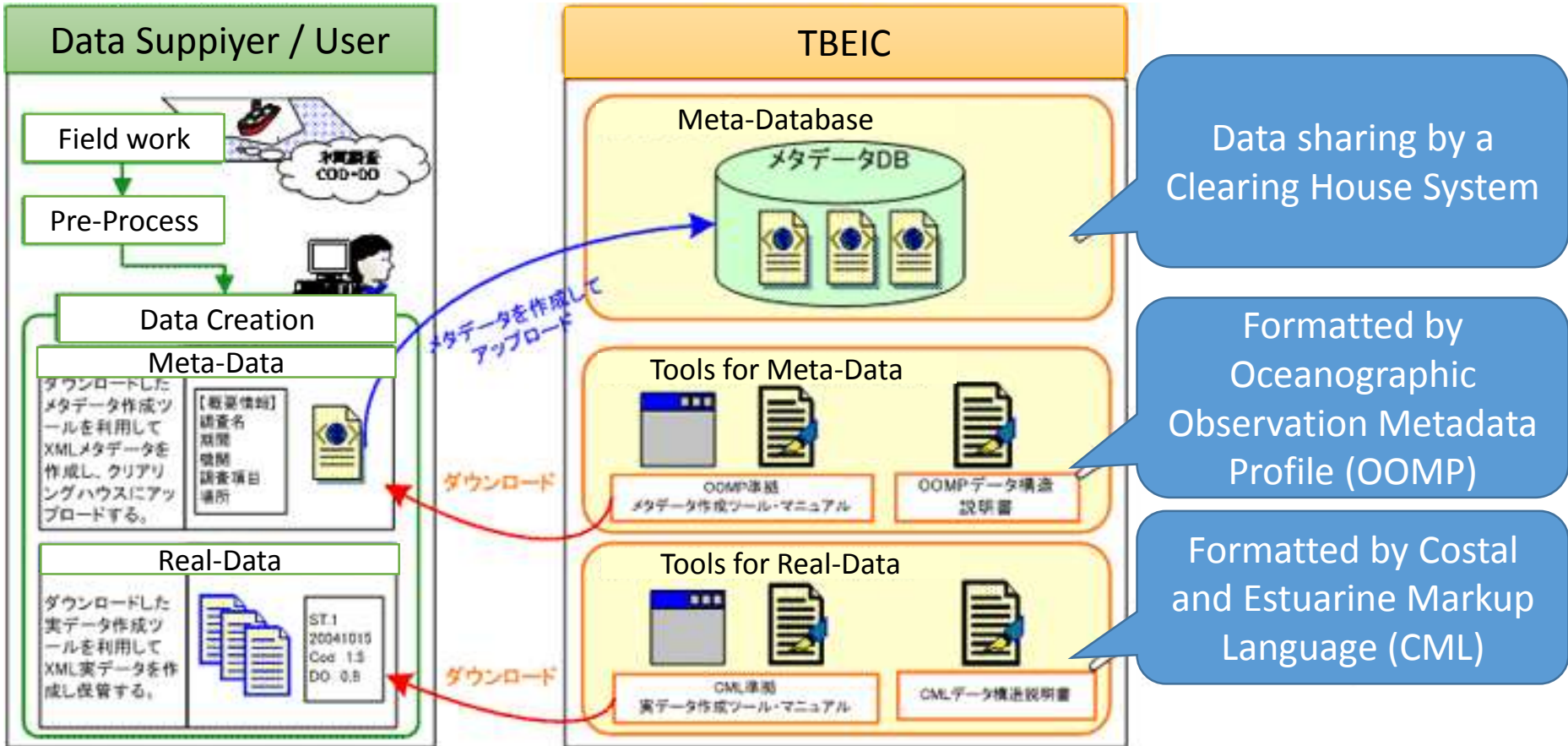


Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG3: Monitoring**

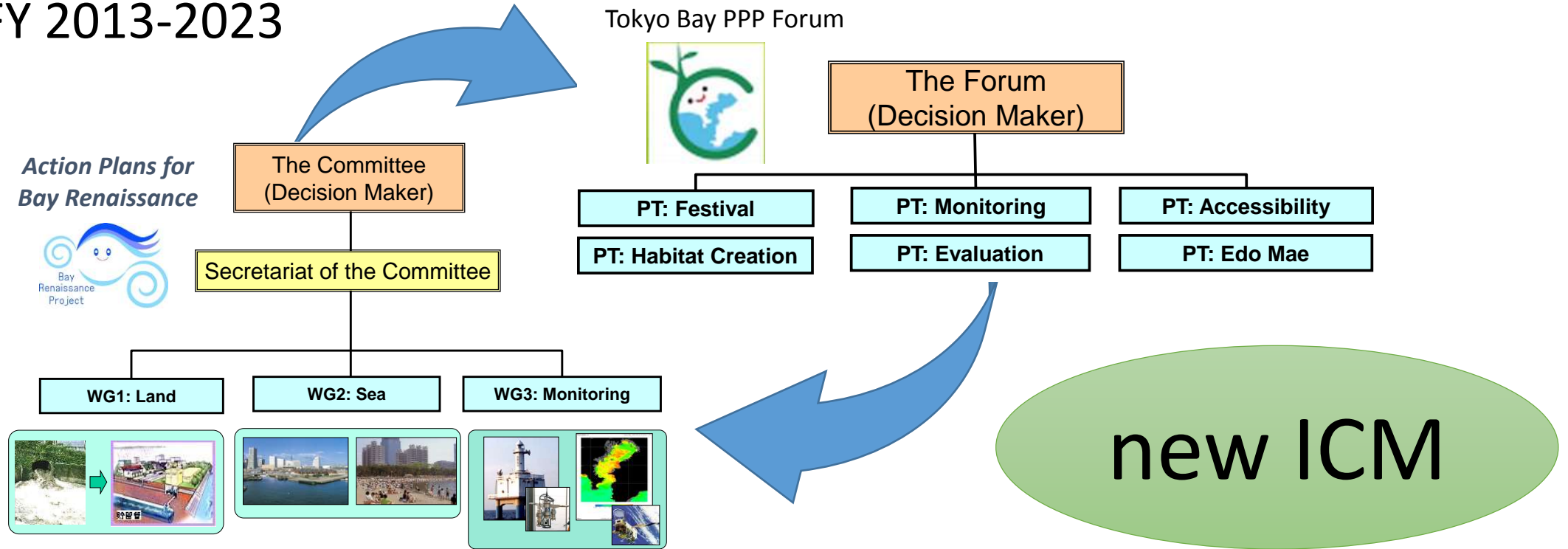


Tokyo Bay Environment Information Center



Title	Back Grounds	Goal settings	Implementations	Lessons learnt
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## Second Phase of the Action Plans for Tokyo Bay Renaissance FY 2013-2023



**Goal: Restore the beautiful coastal environment for enabling pleasant use and sustaining biodiversity which includes *edo-mae* as a wealth of capital.**

# Preliminary attempt of habitat census for goby with public participation



Photo by Y. Sawada: Goby fishing boats at Tokyo bay in 1960s

Title

Back Grounds

Goal settings

Implementations

Lessons leant

親子はじめてつり教室(浦安水辺の会)



朝潮運河ハゼ釣り調査と運河探訪



若者のための夏休みボランティア2015

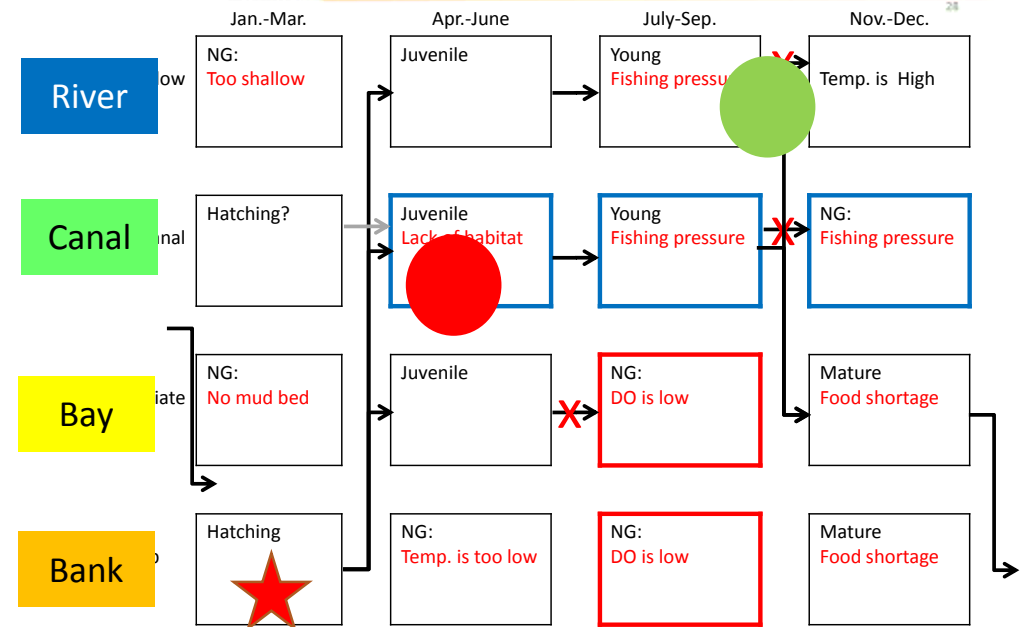
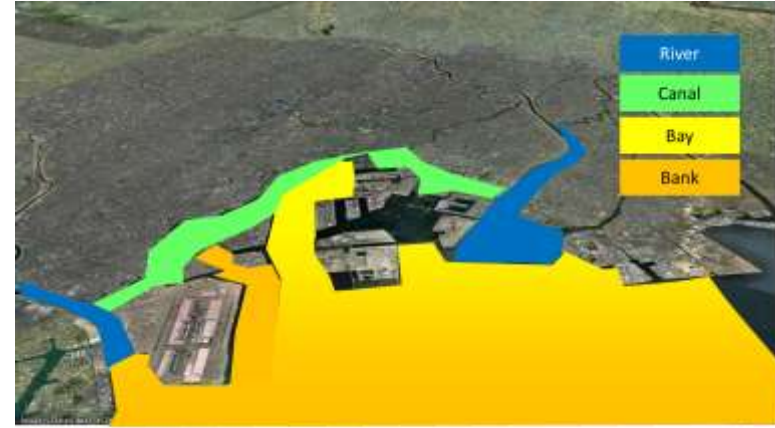
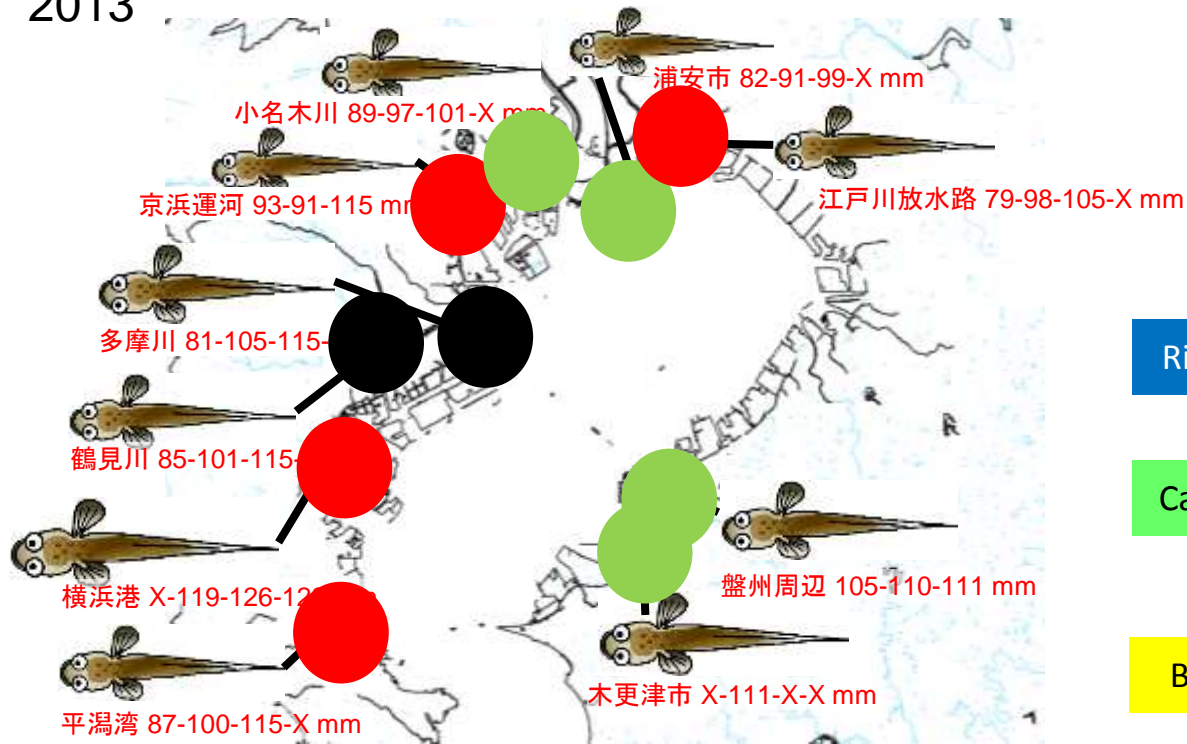


高島水際線公園ハゼ釣り調査(ハマハゼ杯)



Title	Back Grounds	Goal settings	Implementations	Lessons leant
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2013



Conservative Model (Hatching at Winter)  
Needs control of fishing pressure

● Rapid Growth    
 ● Slow Growth    
 ● Rapid Growth but Small

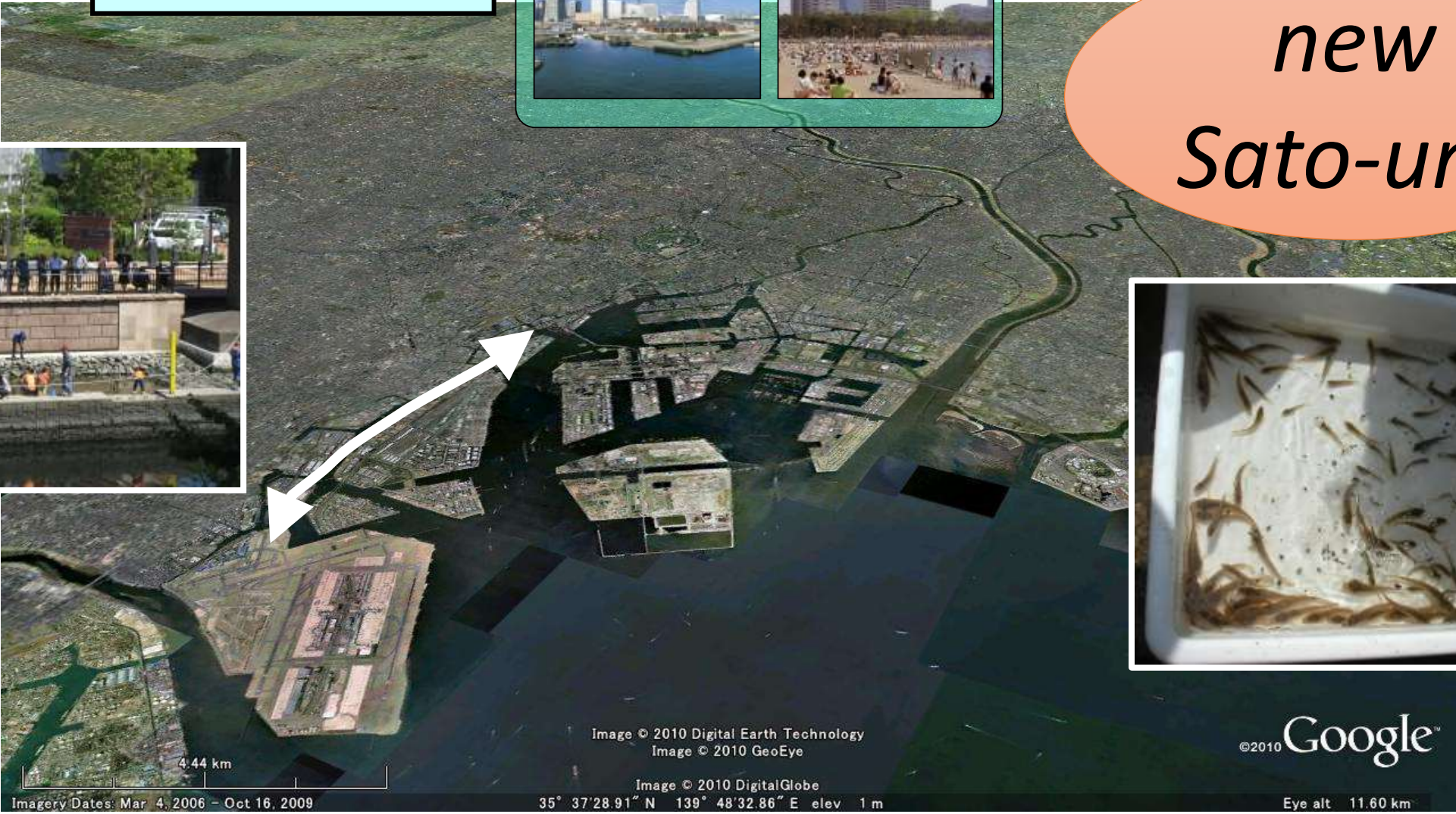


Title	Back Grounds	Goal settings	Implementations	Lessons leant
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**WG2: Sea**



*new  
Sato-umi*

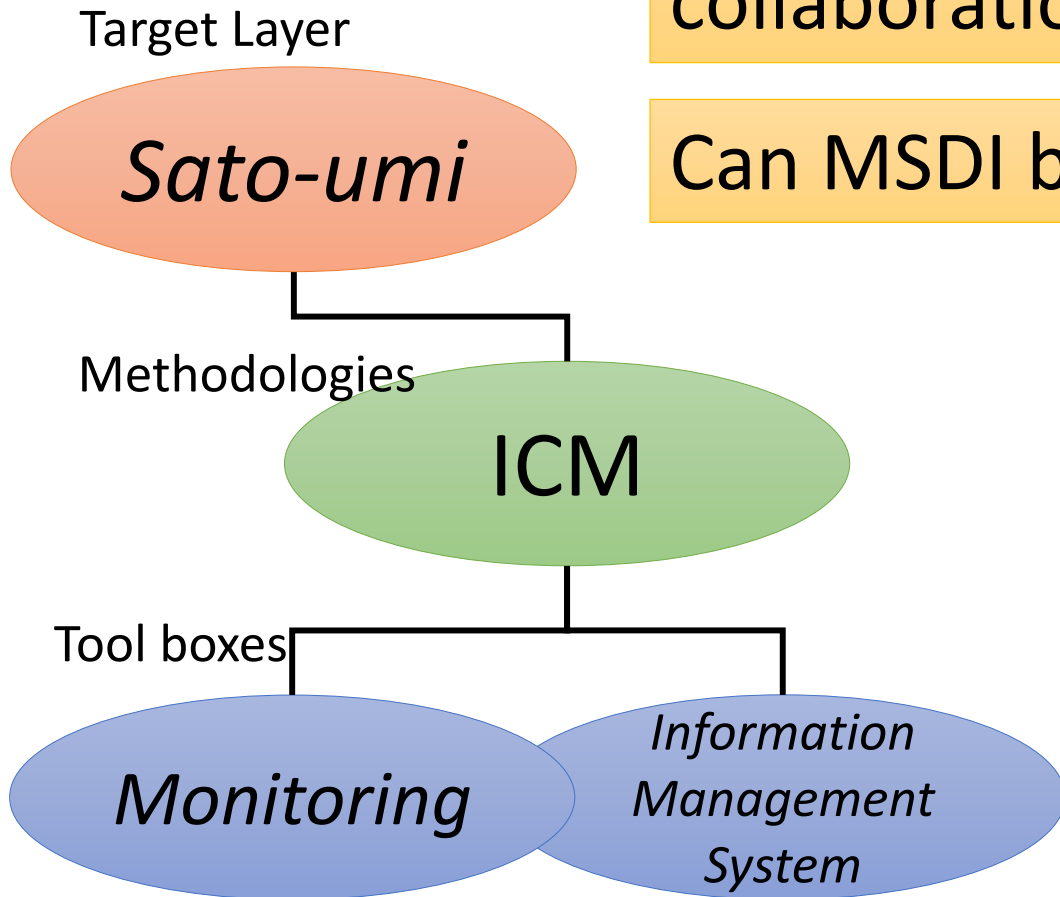


Title	Back Grounds	Goal settings	Implementations	Lessons leant
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# Challenges in Marine Environment Management in Tokyo Bay

Needs of ICM tools development under collaboration of scientists, policy maker and public.

Can MSDI be an ICM tool?



ICM should considering;

- 1) Objective setting and feedbacks
- 2) Dynamics of coastal processes
- 3) Visibility to various stake holders

ICM Tools should represent;

- 1) Objects: e.g. *sato-umi*, ecosystem
- 2) Dynamics: e.g. networking, distribution
- 3) Visible indication: e.g. goby census

Title	Back Grounds	Goal settings	Implementations	Lessons leant
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# Challenges in Marine Environment Management in Tokyo Bay for our future !



Thank you for your considerations !