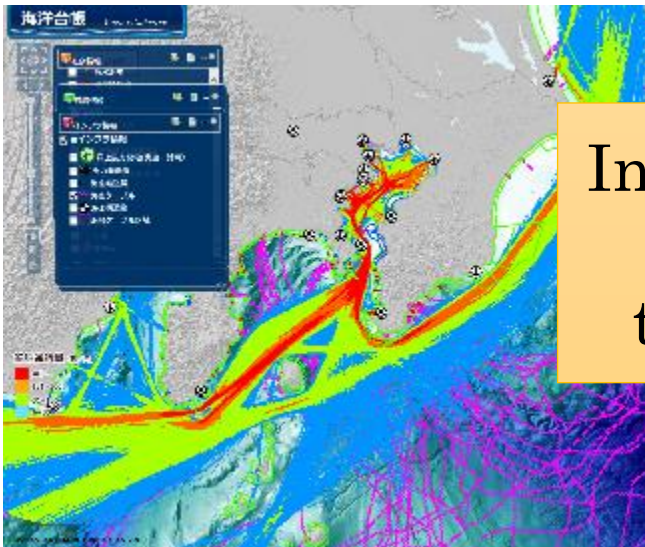# New Marine web-GIS services, the "MSIL" in Japan (MSIL: MDA Situational Indication linkages)

January 30, 2023

Hydrographic and Oceanographic Department

History of Geospatial Information

2012～2018

"Marine Cadaster"

Integration of ArcGIS technology

2019～

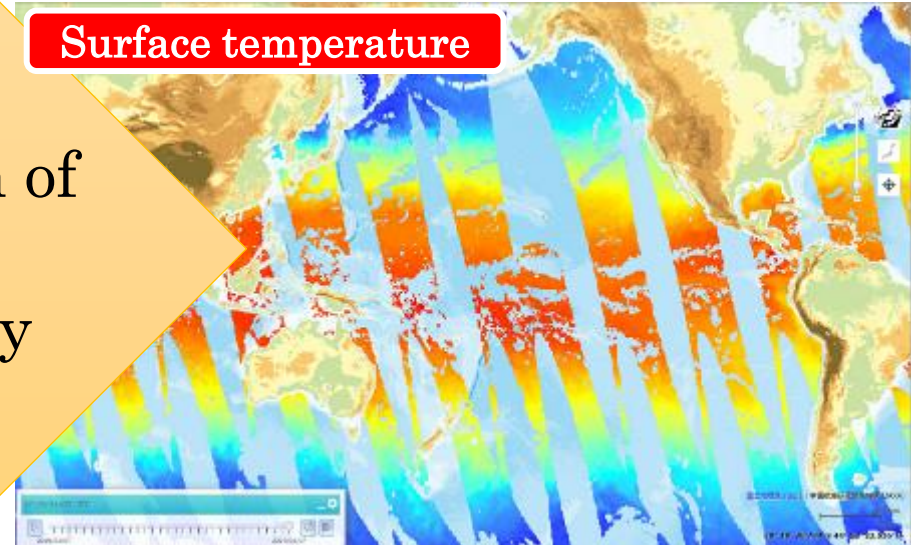### New Web-GIS service "MSIL"

Surface temperature

- ■ Information surrounding Japan
- ■ Only static information

- ■ about 100 layers
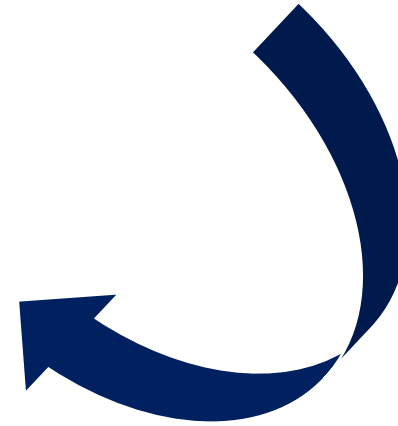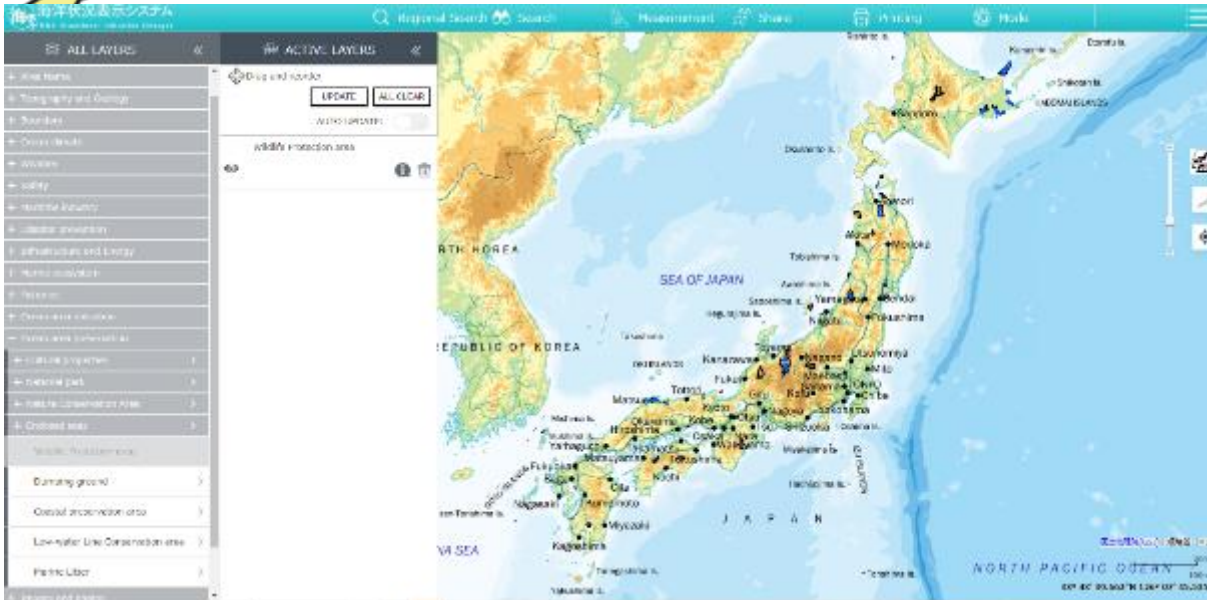- ■ Working with other 6 agencies and data are centralized at JHOD server

- ■ Information at global scale
- ■ Real-time information

- ■ More than 250 layers
- ■ Working with other 13 agencies
- ■ Distributed database

MSIL Top page

ENTER
(English Version)

English Version

The concept of MDA applies various fields

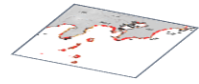|	
Ministry of Defense	
Japan Coast Guard	
Japan Meteorological Agency	
Rel. ministries & agencies	
Ocean research org.	
Space exploring org.	
Local governments Private sectors	
Bi/Multi framework	

MSIL
(MDA Situational Indication Linkages)
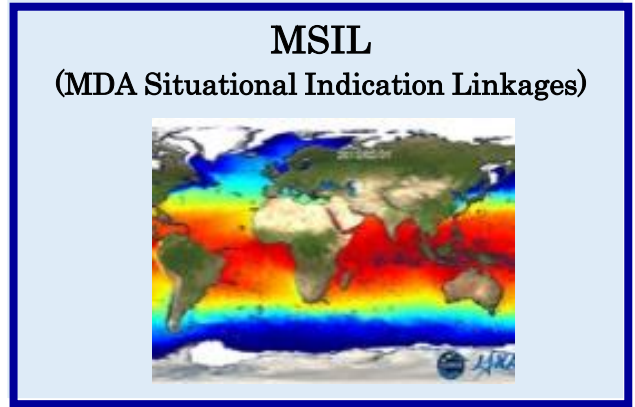
Application field
· Maritime safety
· Disaster preparedness
· Promotion of marine industry
· Environmental conservation
· R/D
· International collaboration and cooperation

Operated by JCG
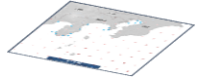**Effective linkage with relevant systems of the government**

- Add Effectiveness and efficiency to the Marine policy making
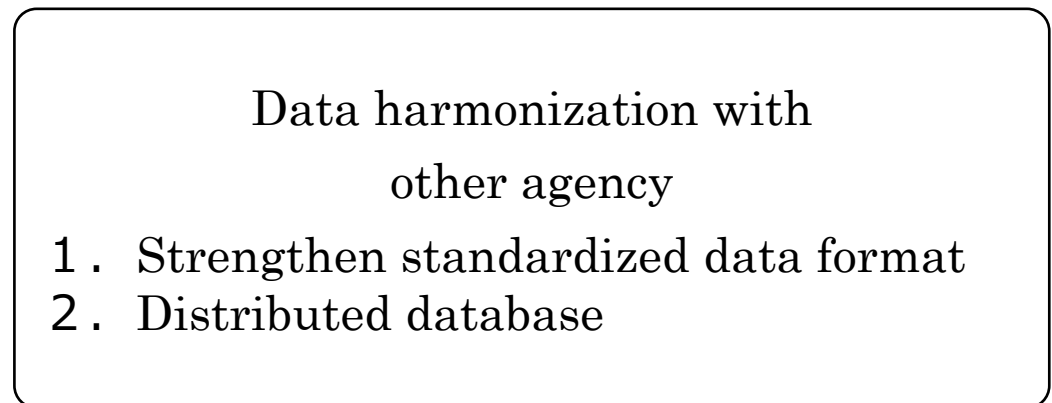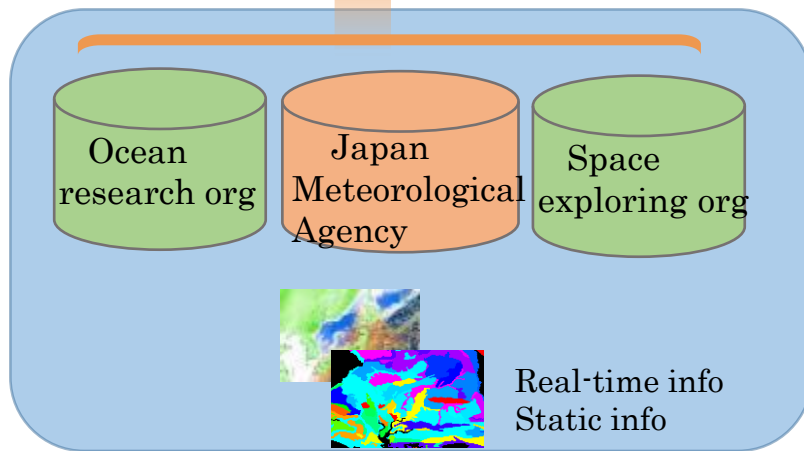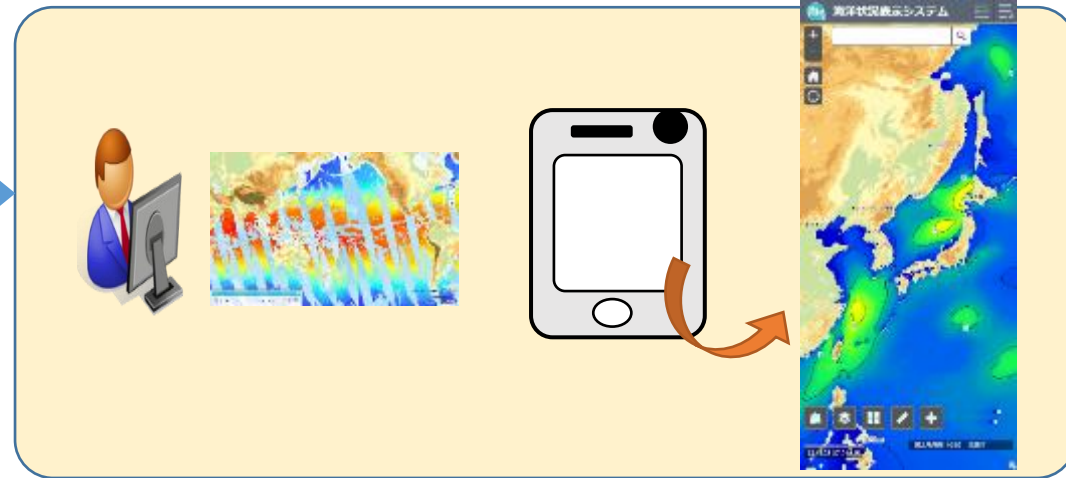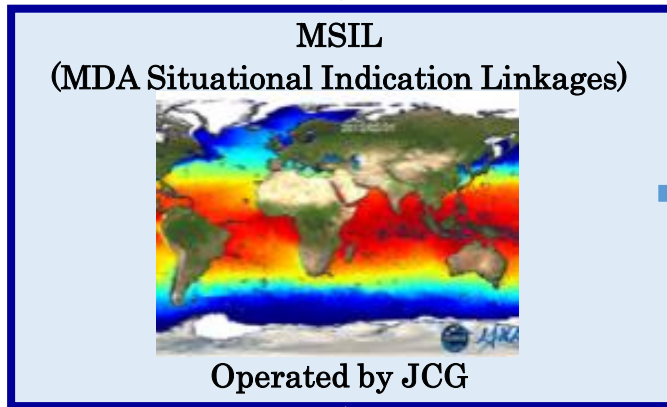- Quick decision making on the emergency case

＊"Policy and measures to strengthen Japan's MDA capability"
(decided by the Headquarters for Ocean Policy in 2018)

The Data flow of MSIL

Real-time info

Static info

MSIL
(MDA Situational Indication Linkages)

Operated by JCG

Ocean research org

Japan Meteorological Agency

Space exploring org

Real-time info
Static info

Data harmonization with
other agency

1．Strengthen standardized data format
2．Distributed database

MSIL web access status (2019.4 ~ 2022.11)

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■ Since MSIL operated from 2019, the number of access has increased

■ In 2022, the number of daily access has reached 10,000

〔access times〕 (left axis)   〔access times〕 (right axis)

Data labels (daily access values): 14,013; 4,608; 3,571; 3,898; 3,346; 4,778; 6,505; 11,034; 6,098; 6,269; 5,491; 5,766; 4,538; 3,621; 4,928; 8,075; 9,660; 10,789; 11,653; 8,701; 7,145; 7,074; 7,131; 7,159; 8,314; 9,934; 11,223; 14,194; 13,924; 13,100; 12,418; 13,110; 9,723; 12,231; 11,343; 9,889; 14,814; 15,001; 13,030; 13,619; 13,242; 12,397; 12,717; 13,279

2019年   2020年   2021年   2022年

Monthly access（left axis）   Daily access（right axis）
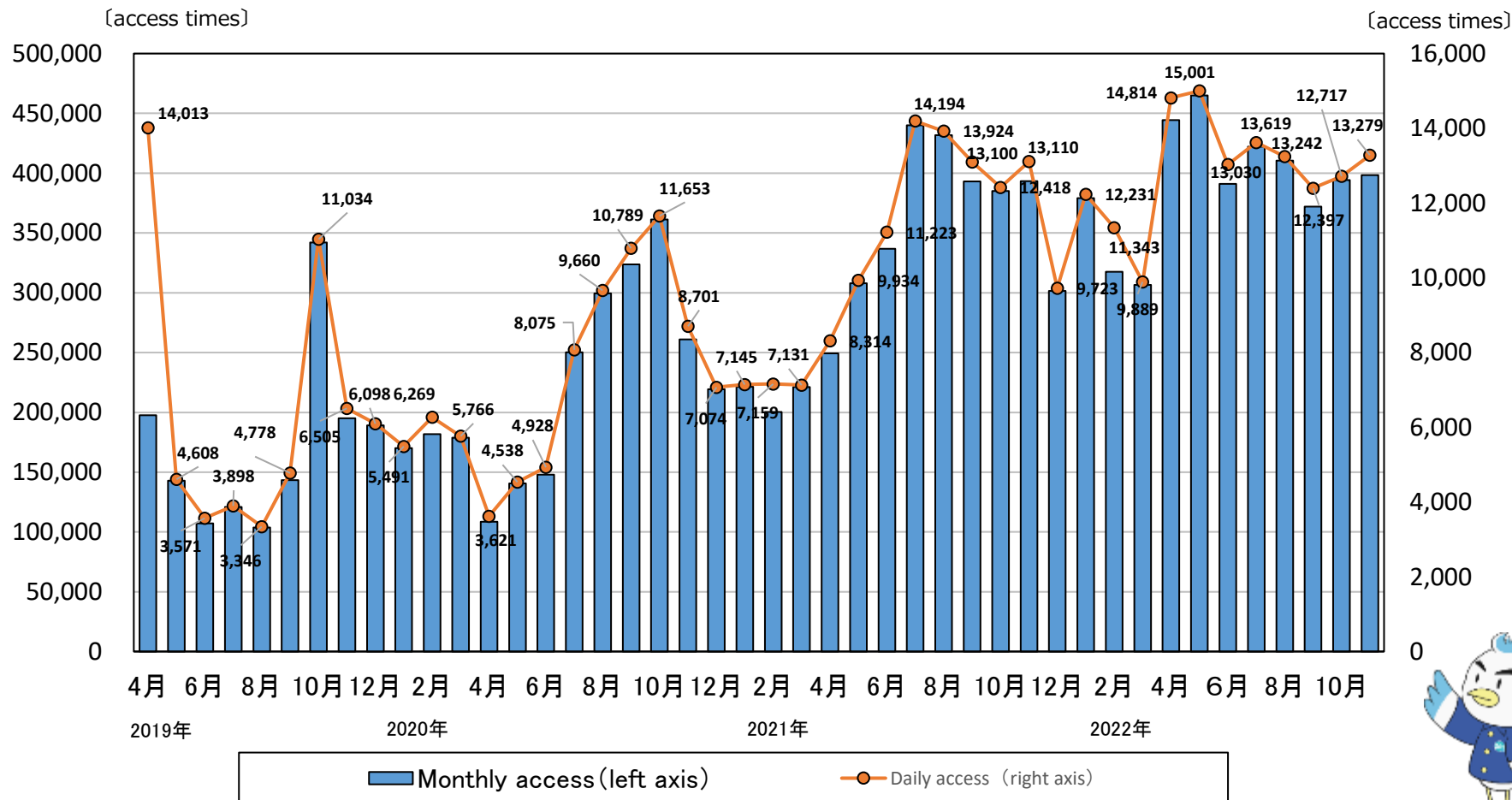
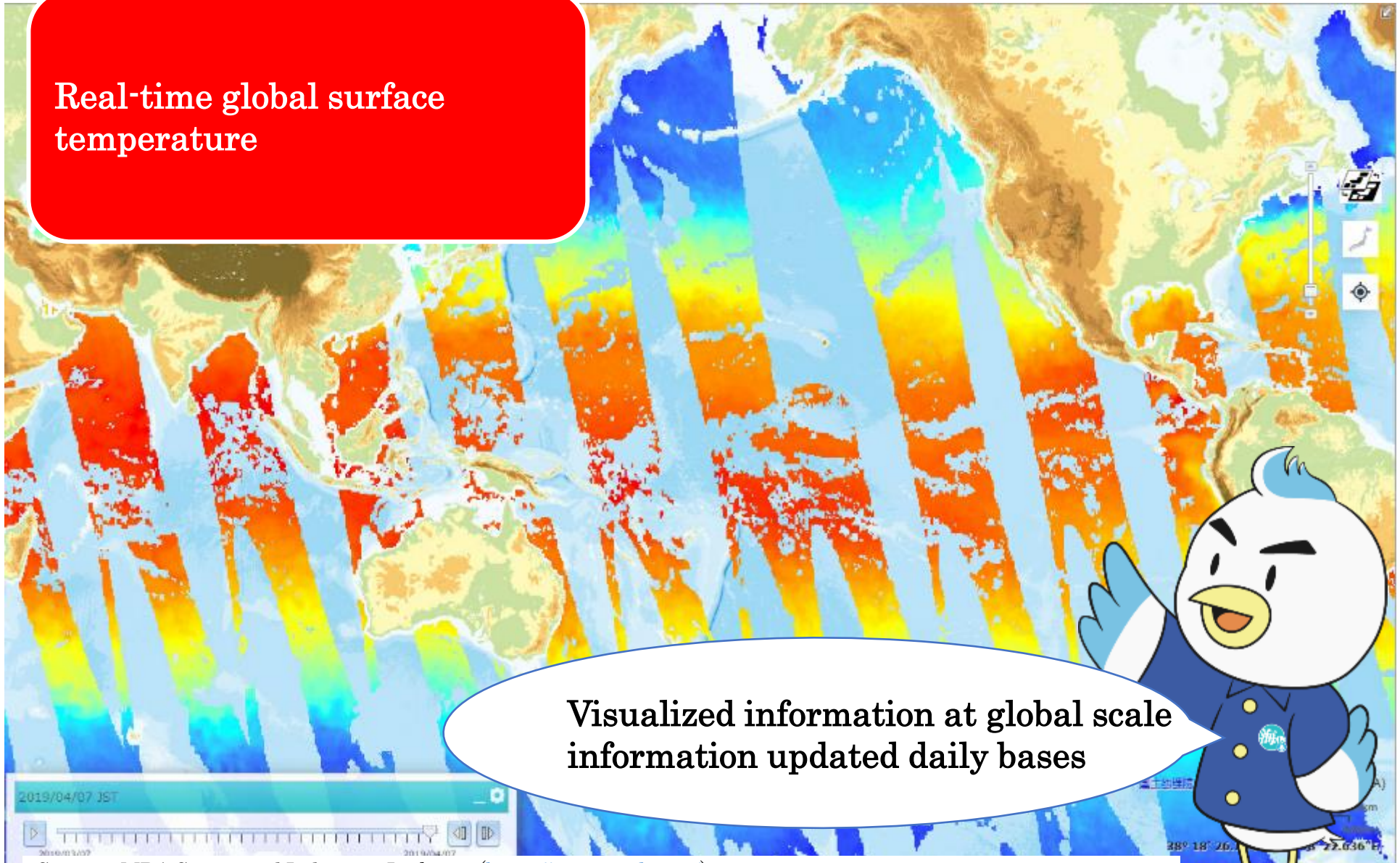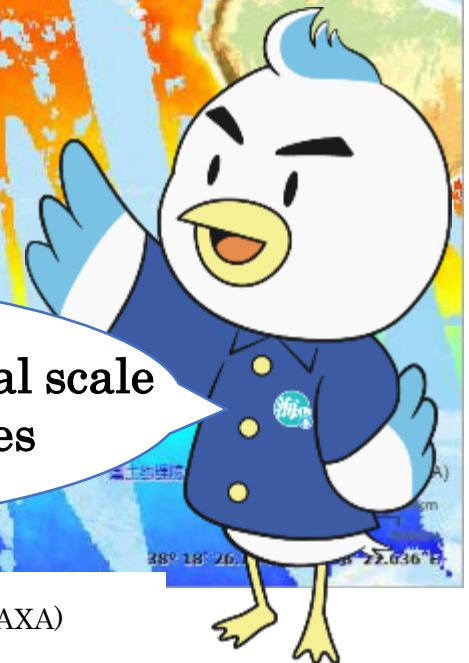# Example 1

Real-time global surface temperature

Visualized information at global scale information updated daily bases

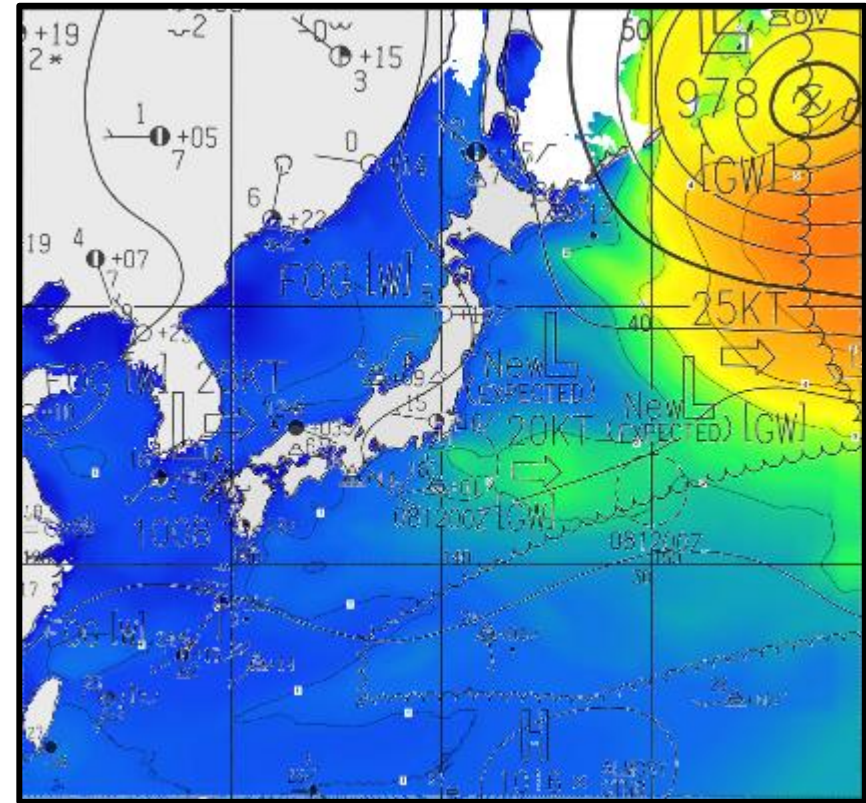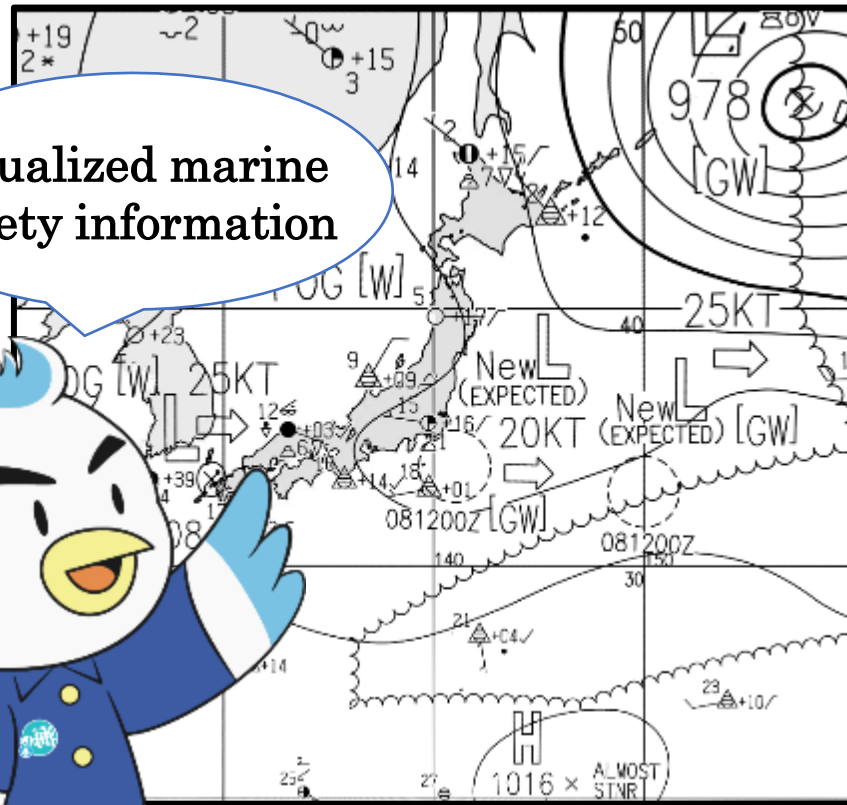Source : MDA Situational Indication Linkages (https://www.msil.go.jp/)
Information source : Geospatial Information Authority of Japan and Japan Aerospace Exploration Agency (JAXA)

Example 2

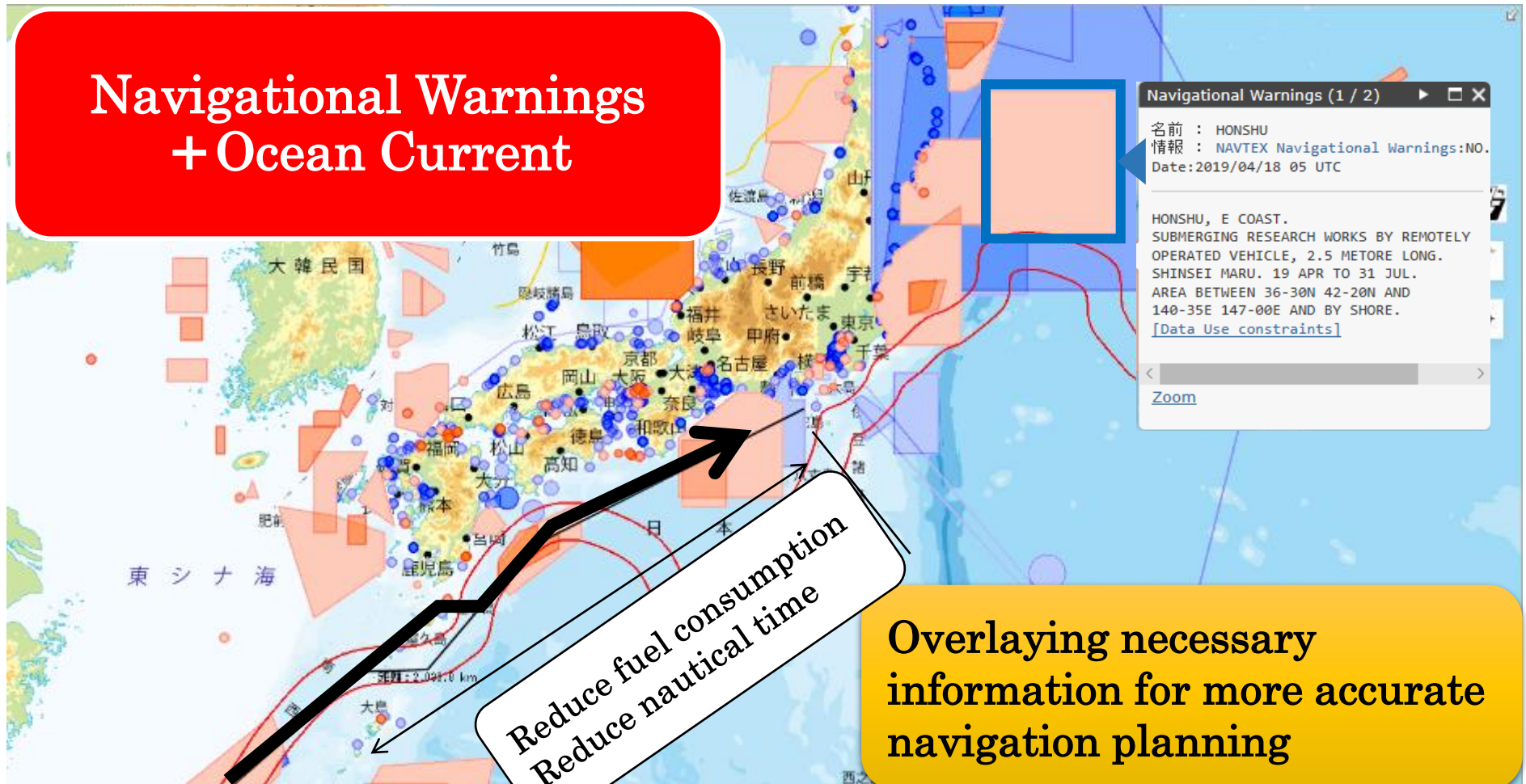**Weather map ＋ wave height**
（Japan Meteorological Agency）

Visualized marine safety information
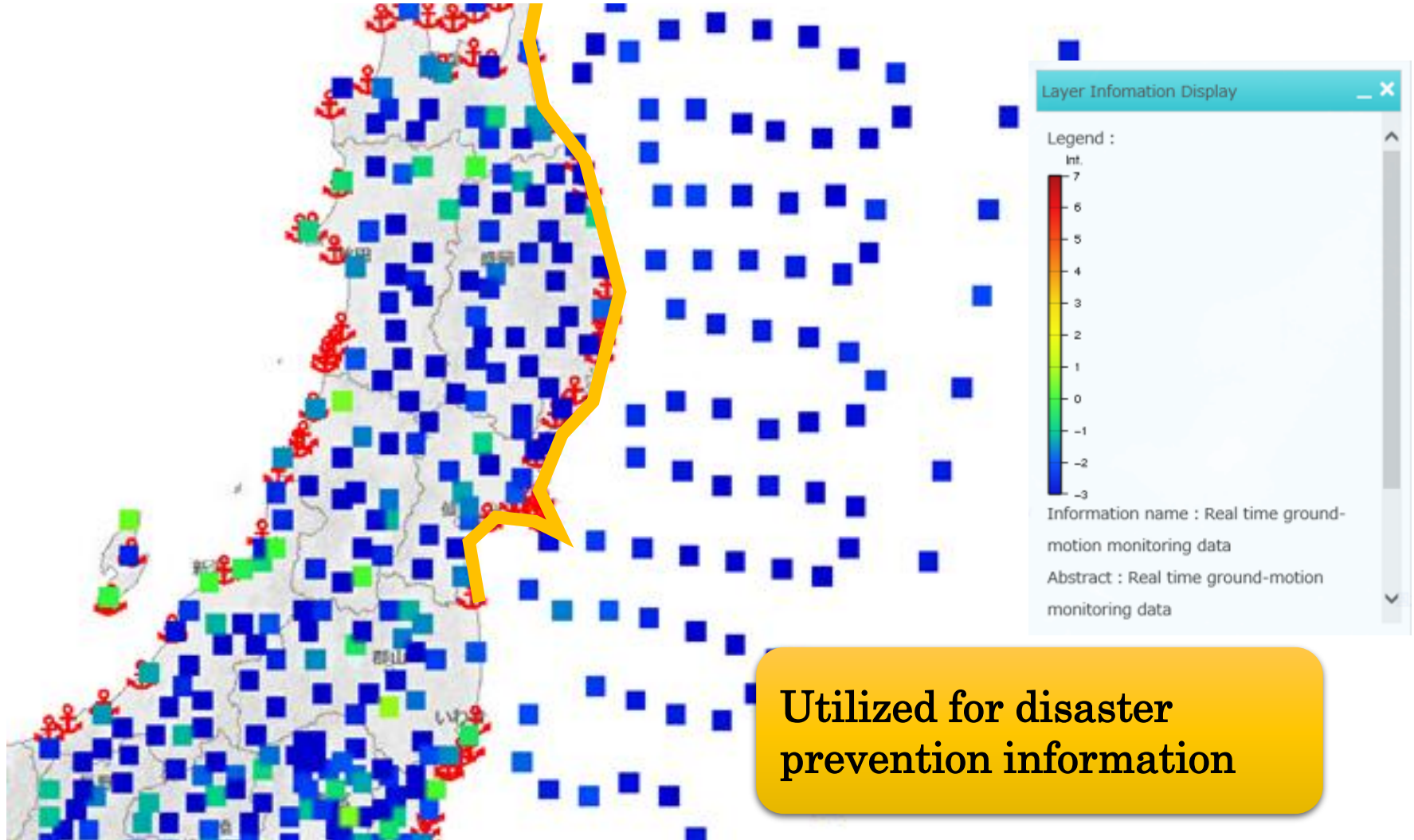
Source：MDA Situational Indication Linkages (https://www.msil.go.jp/)
Information source：Geospatial Information Authority of Japan and Japan Metrological Agency
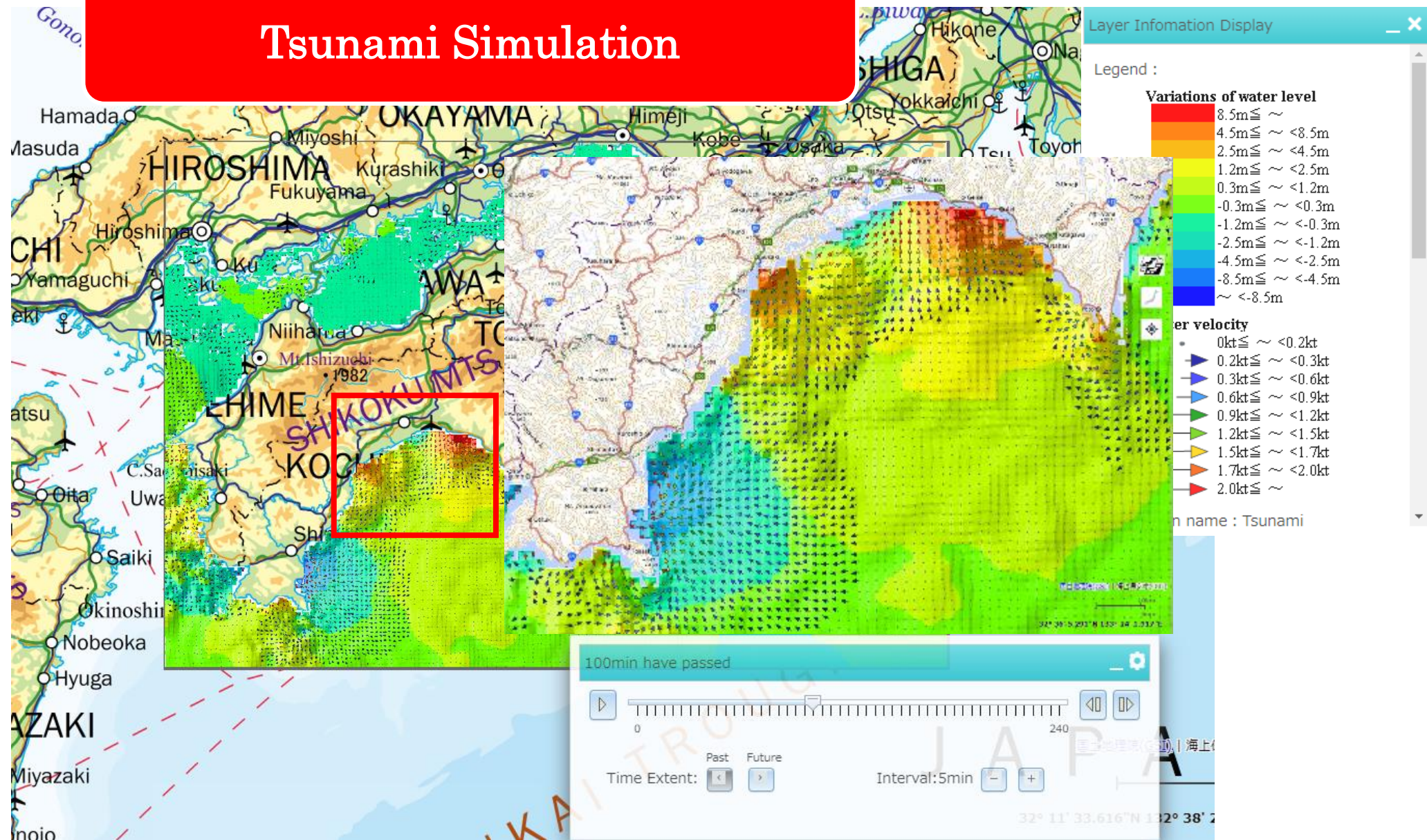
Example 4

Navigational Warnings ＋Ocean Current

Navigational Warnings (1 / 2)

名前 ： HONSHU
情報 ： NAVTEX Navigational Warnings:NO.
Date:2019/04/18 05 UTC

HONSHU, E COAST.
SUBMERGING RESEARCH WORKS BY REMOTELY
OPERATED VEHICLE, 2.5 METORE LONG.
SHINSEI MARU. 19 APR TO 31 JUL.
AREA BETWEEN 36-30N 42-20N AND
140-35E 147-00E AND BY SHORE.
[Data Use constraints]

Zoom

Reduce fuel consumption
Reduce nautical time

Overlaying necessary information for more accurate navigation planning

■ **Accurate grasp of the warning area**
■ **Consider ocean current and route setting effectively**

Example 5

Earthquake intensity ＋ tsunami warning

Layer Infomation Display

Legend :
Inf.

7
6
5
4
3
2
1
0
−1
−2
−3

Information name : Real time ground-motion monitoring data

Abstract : Real time ground-motion monitoring data

Utilized for disaster prevention information

Example 6

Tsunami Simulation

Layer Infomation Display

Legend :

Variations of water level

	8.5m≦ ~
	4.5m ~ <8.5m
	2.5m ~ <4.5m
	1.2m ~ <2.5m
	0.3m ~ <1.2m
	-0.3m≦ ~ <0.3m
	-1.2m≦ ~ <-0.3m
	-2.5m≦ ~ <-1.2m
	-4.5m≦ ~ <-2.5m
	-8.5m≦ ~ <-4.5m
	~ <-8.5m

...er velocity

	0kt≦ ~ <0.2kt
	0.2kt≦ ~ <0.3kt
	0.3kt≦ ~ <0.6kt
	0.6kt≦ ~ <0.9kt
	0.9kt≦ ~ <1.2kt
	1.2kt≦ ~ <1.5kt
	1.5kt≦ ~ <1.7kt
	1.7kt≦ ~ <2.0kt
	2.0kt≦ ~

...n name : Tsunami

100min have passed

0   240

Time Extent: Past Future   Interval:5min

32° 11' 33.616"N 132° 38' ...

Example 7
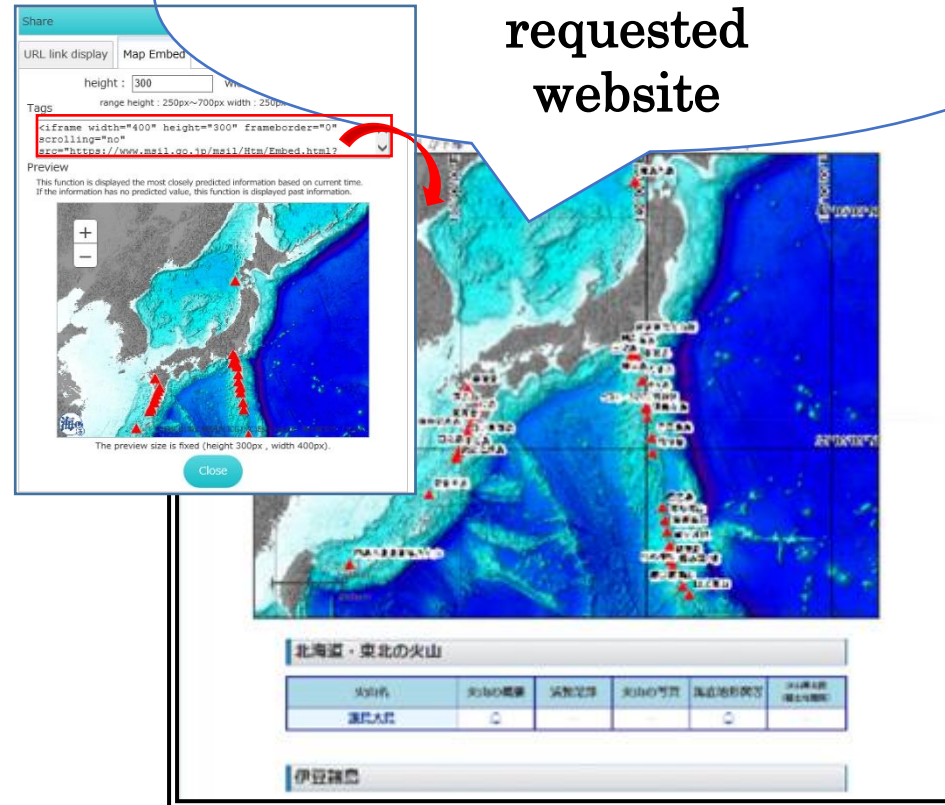
JCG *JAPAN COAST GUARD*

Sea ice concentration of North Pole

Thematic Maps

MSIL has map set of each theme(fishery, marine leisure etc.) as Thematic Maps (Japanese only)

Source：MDA Situational Indication Linkages (https://www.msil.go.jp/)
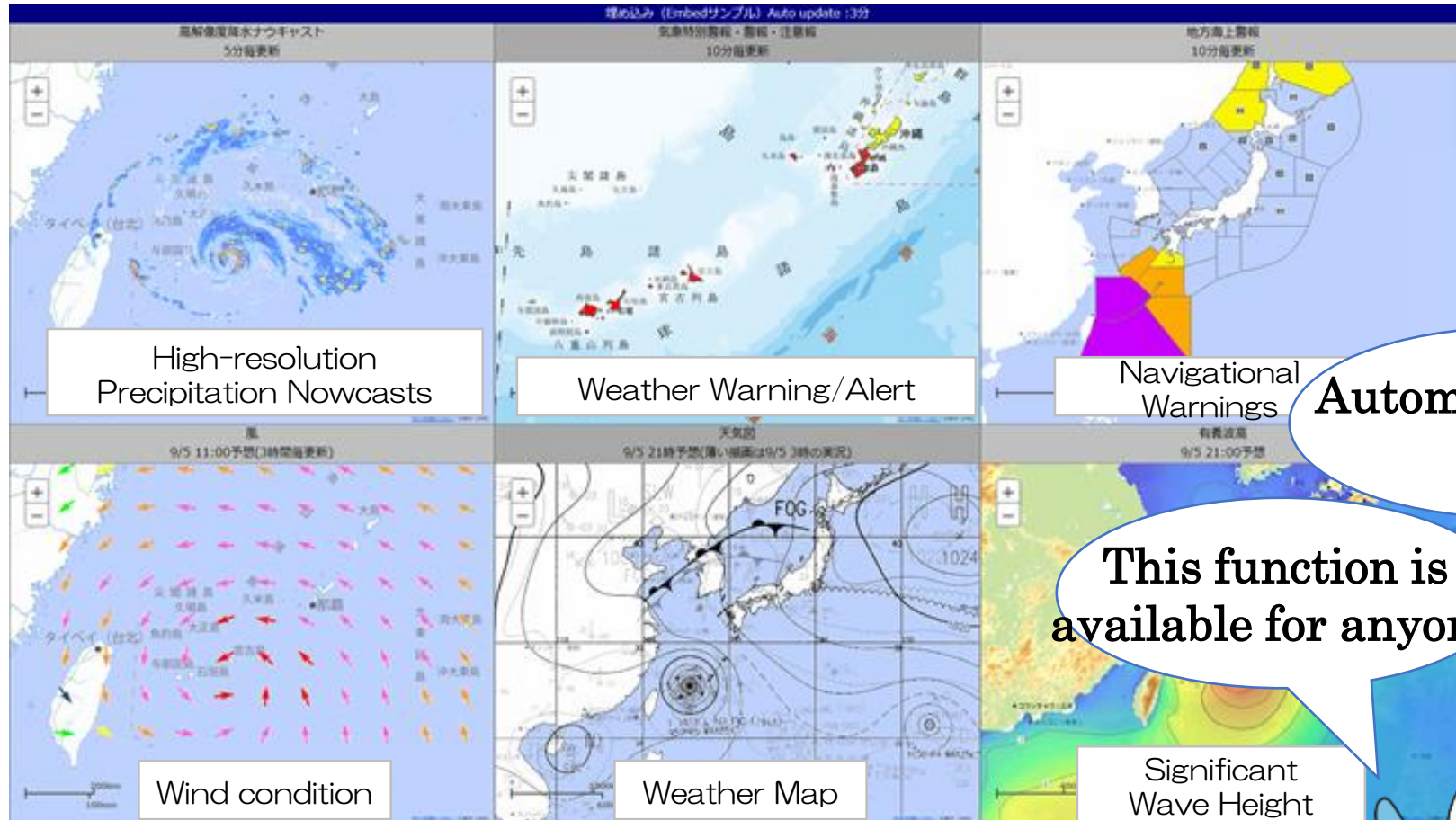
The MSIL maps can be saved as URL and imported into requested website

Source：MDA Situational Indication Linkages (https://www.msil.go.jp/)
Information source： GEBCO|(C)Esri Japan, Geospatial Information Authority of Japan and Metrological Agency

Monitoring of real-time situation

Real-time Monitoring of multiple information on One Screen!
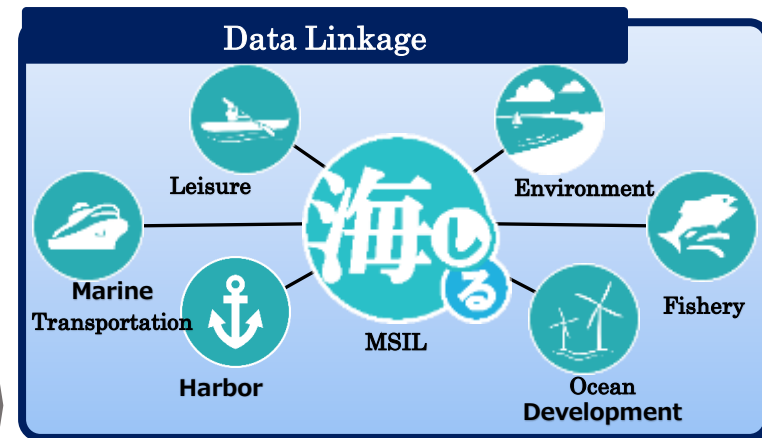## Example：A Typhoon hit Okinawa islands on September 5, 2020

High-resolution Precipitation Nowcasts

Weather Warning/Alert

Navigational Warnings

Wind condition

Weather Map

Significant Wave Height

Automatic update

This function is available for anyone!

Source：MDA Situational Indication Linkages (https://www.msil.go.jp/)
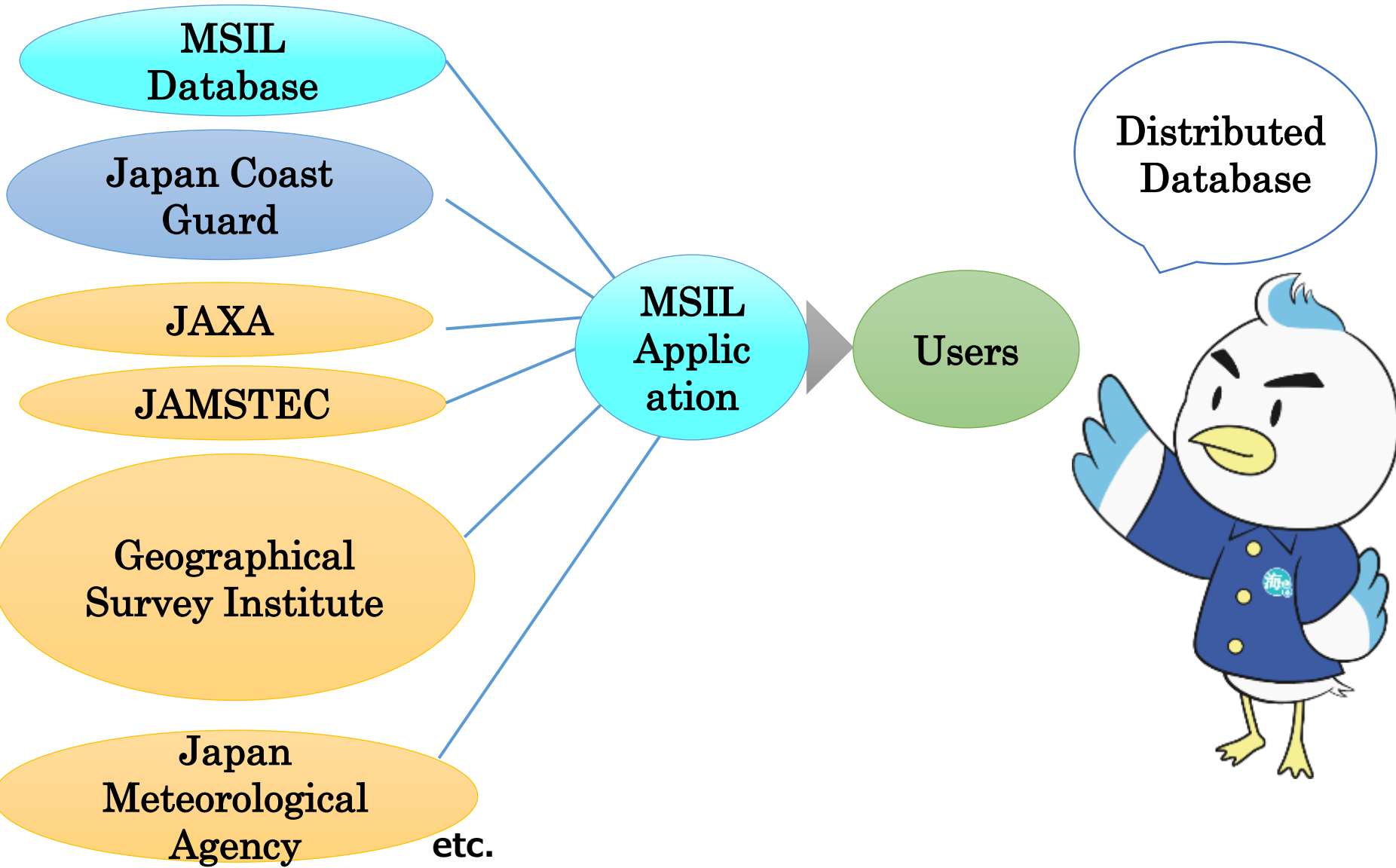Information source：Geospatial Information Authority of Japan and Metrological Agency

Collecting information for disaster prevention by Disaster Prevention Agency
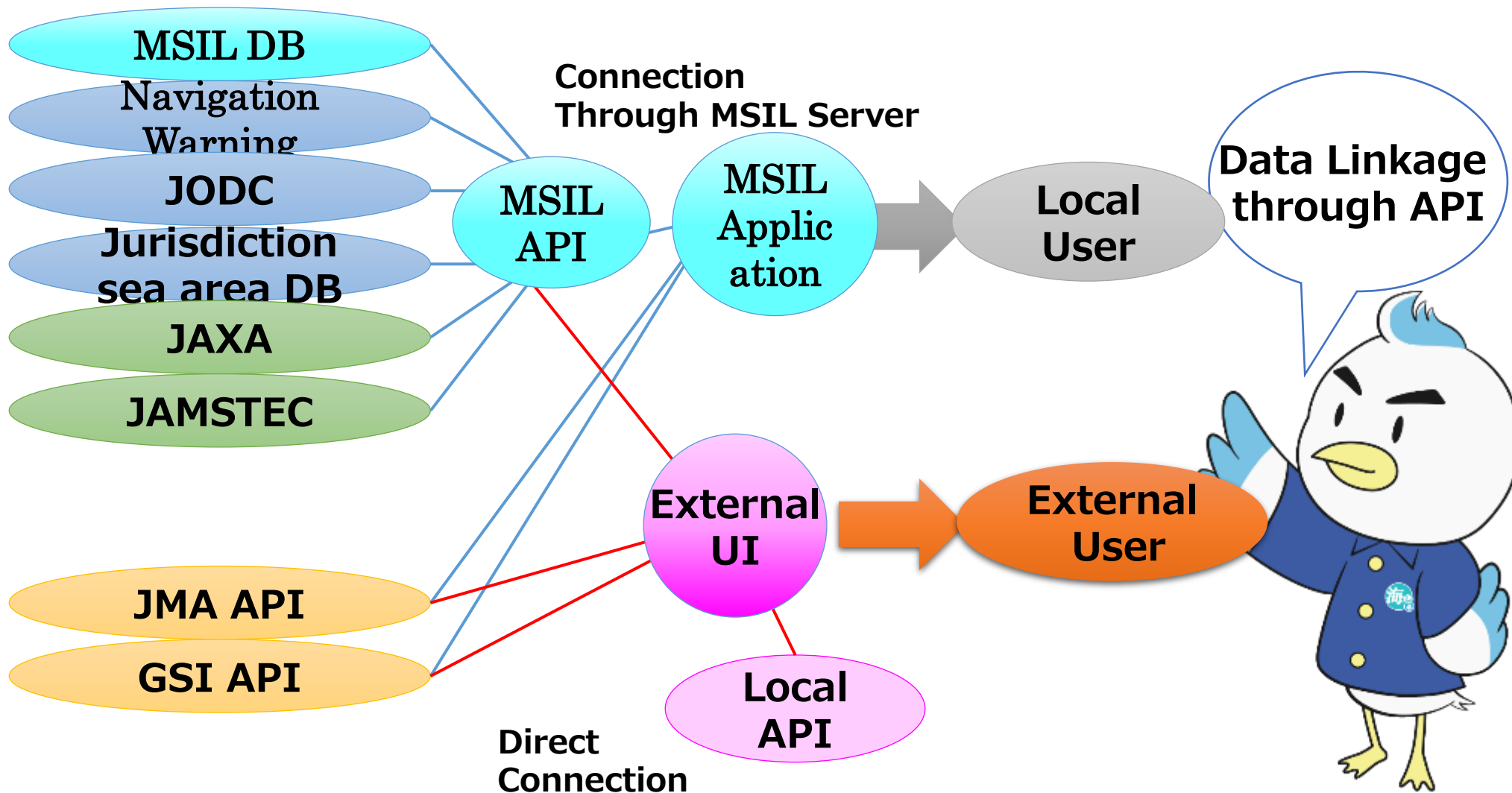
■ It is of great significance to contribute ocean industry as well as ocean policy through MSIL as ocean data service as a hub (2020/2021 economic growth strategy of Japan)

MSIL
(MDA Situational Indication Linkage)

Space **exploring org.**

Ministry **of Defense**

Japan Meteorological Agency

Ocean research **org.**

MSIL

海しる

<海上保安庁が整備・運用>

・Maritime safety
・Promotion of marine industry
・R/D

・Information at global scale
・More than 200 items added

Operated from year 2019
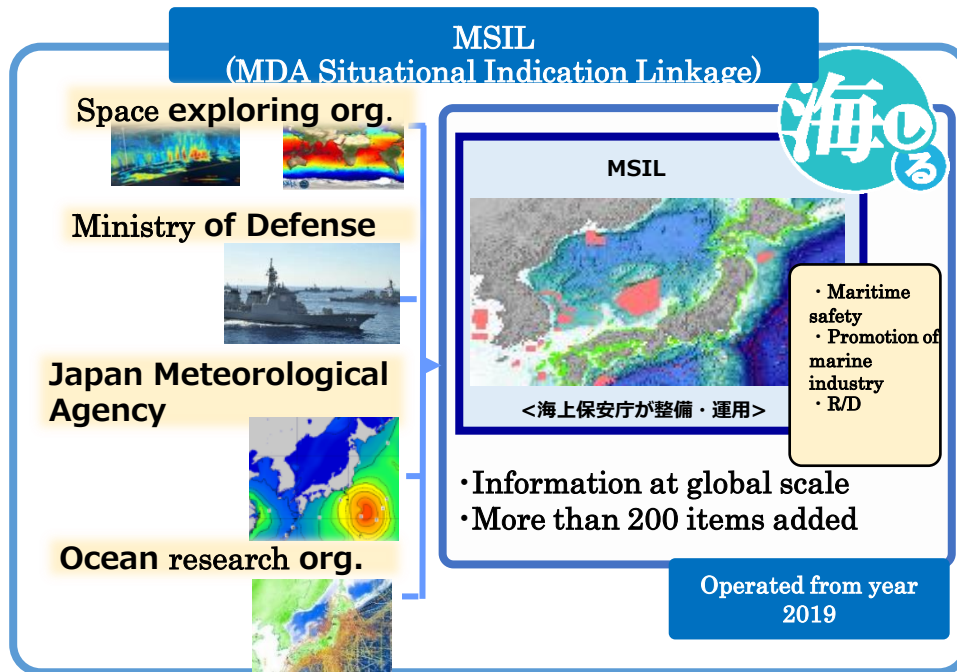
Things to Consider

■To understand the needs from users, especially commercial sectors which belong to marine environment

Data Linkage

Leisure

Environment

Marine Transportation

海しる

Fishery

MSIL

Harbor

Ocean Development

Specific effort

Forum

AOV

Ocean real-time information

MSIL API

API

Standardization

MSIL API Data Linkage (Recent Topic year 2022)

MSIL API Data Linkage (Recent Topic year 2022)

Japan Coast Guard released Marine Education Contents on MSIL toward elementary and junior high school students in order to promote marine education in Japan.

Features of 「MSIL」 Marine Education Contents

Point 1

No need to install

Application software

Point 2

Select theme from

Various fields

Point 3

Select relevant information and create 「MSIL」 map

「MSIL」 Marine Education Contents

Select theme
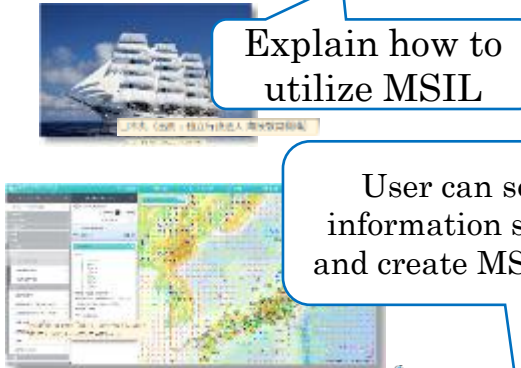
Explain how to utilize MSIL

User can select information sources and create MSIL map

• As government ministries, this service (MSIL) is the first attempt to gather 250 information from 13 different organizations and visualize global real-time data in one screen

- Best use of latest web-based GIS technology
- Significance of the MSIL: simplicity, functionality, operability

Thank you for your kind attention!

Please Check the Website

https://www.msil.go.jp/

MSIL Japan   Search