



KHOA

Korea Hydrographic and
Oceanographic Agency

12 Sep. 2023



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- 02 Ocean Observation & Forecast & Research
- 03 Hydrographic Survey
- 04 Nautical Chart
- 05 Ocean Satellite Data



C 01



Organizational Overview



HISTORY



2000s

- **Diverse interests**

KHOA

- Hydrographic Survey
- Nautical Chart
- Ocean Observation
- National Ocean Satellite Center
- Ocean Forecast

1990s

- **UN Law of the Sea**

KHOA

Ministry of Oceans and Fisheries

- Hydrographic Survey
- Nautical Chart

1960s

- **Economic growth**

Hydrographic Division of the Ministry of Transportation

1950s

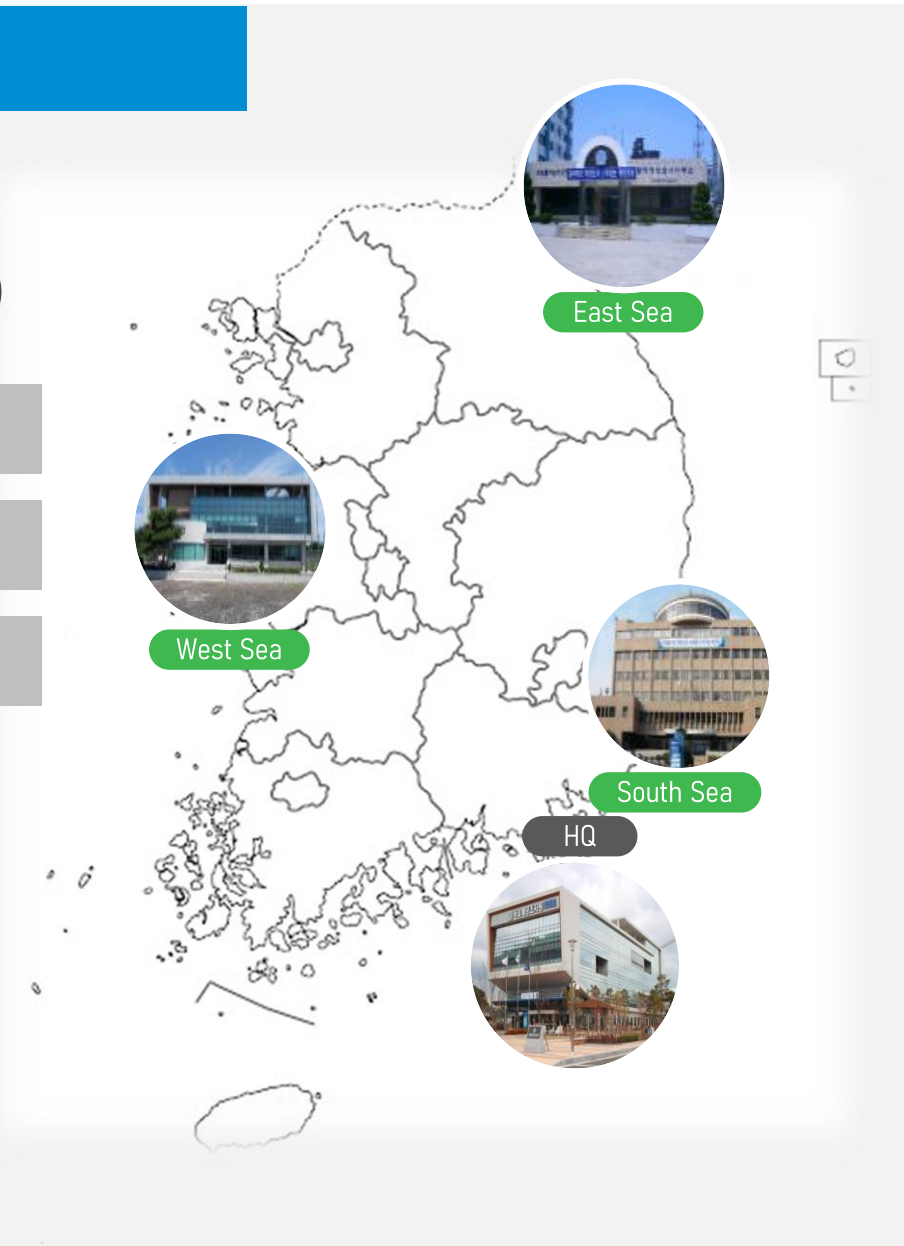
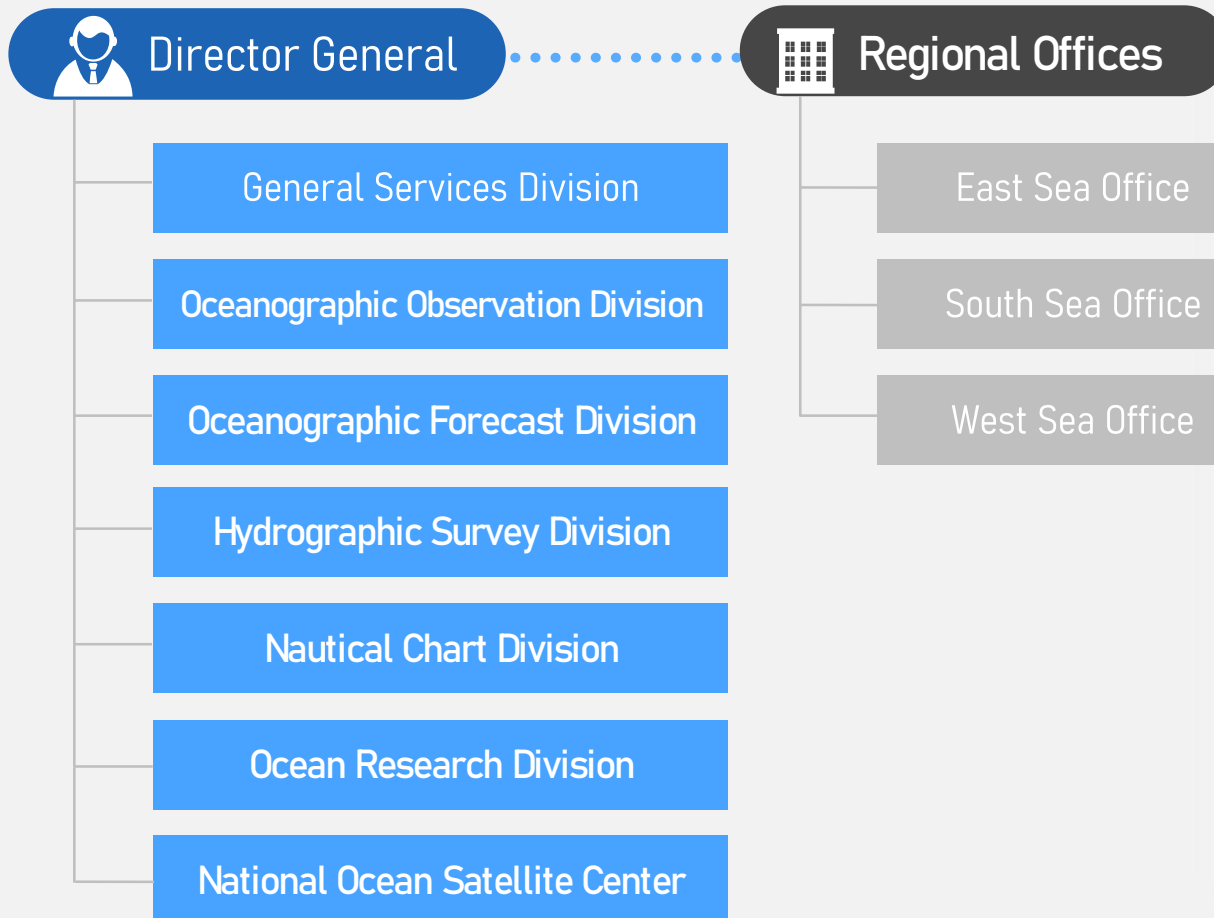
- **National security**

Hydrographic Division of the ROK Navy

ORGANIZATION



7 Division, 3 Regional Offices, 240 staff



SURVEY VESSELS



Haeyang 2000 (2 161 t)



Badaro 1 (695 t)



Badaro 2 (273 t)



Badaro 5 (189 t)



Namhaero (52 t)



Dongaero (136 t)



Hwanghaero (77 t)



Haeyangnuri (90 t)



02



Ocean Observation Forecast Research



KOREA OCEAN OBSERVING NETWORK (KOON)



OCEAN RESEARCH STATION (3)

TIDE, WAVE,
WATER TEMPERATURE & SALINITY,
AIR TEMPERATURE & PRESSURE,
WIND SPEED & DIRECTION

OCEAN BUOY (35)

CURRENT, WAVE,
WATER TEMPERATURE,
AIR TEMPERATURE & PRESSURE,
WIND SPEED & DIRECTION

TIDAL STATION (55)

TIDE,
WATER TEMPERATURE & SALINITY,
AIR TEMPERATURE & PRESSURE,
WIND SPEED & DIRECTION

HF RADAR (44)

CURRENT

OCEAN FORECAST SERVICE



Numerical production model area



Index service for marine recreational activities



Port Oceanographic Information System



Ocean Data in Grid Framework



Real-time Rip Current Warning System



Ocean forecast broadcasting



해양예보 서비스 제공 현황

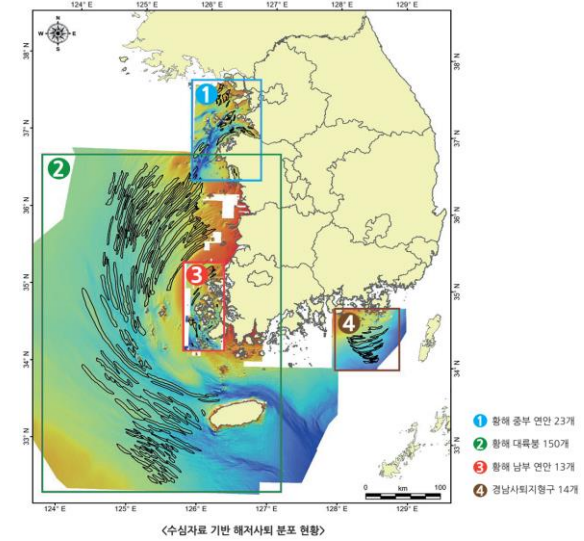
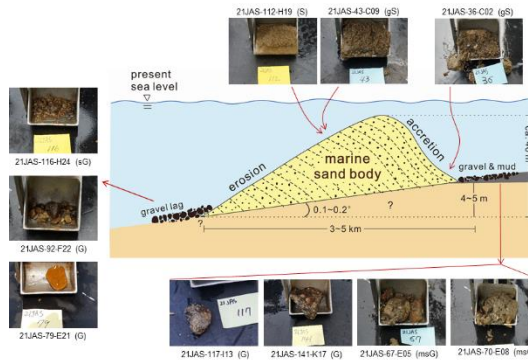
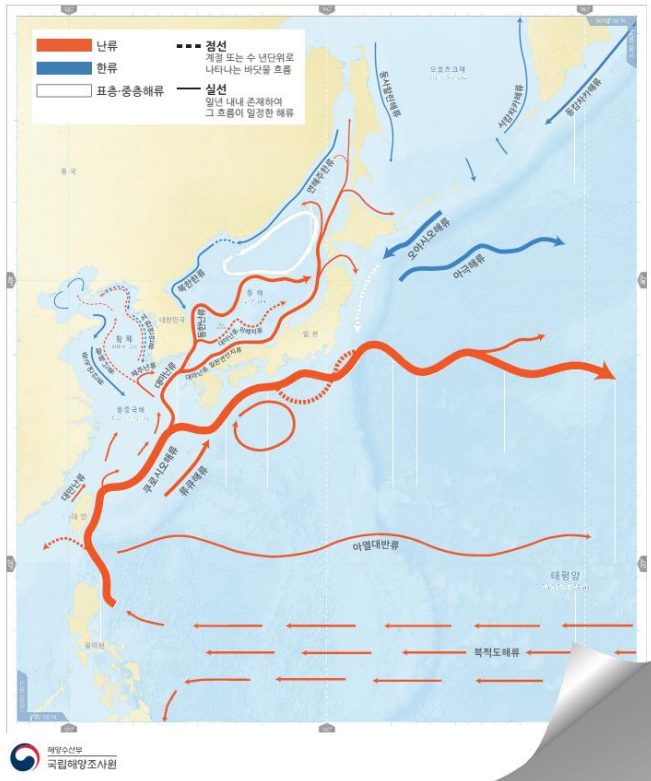
DATA MANAGEMENT



■ Schematic Maps of Surface Currents

■ Submarine sand ridge

■ National Ocean Data Management Centre



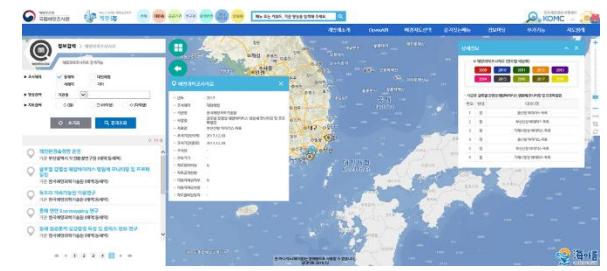
해양과학조사자료 관리기관

해양조사 정보를 취합하여 이용자에게 제공
해양과학조사자료 '공동활용' 도모

해양과학조사자료 목록

- 생선농도
- 조사기관
- 시업점
- 조사기간시작
- 조사기간종료
- 조사해역·위치
- 조사선
- 조사배비
- 자료관리 담당자 정보

바다누리 해양정보 서비스
Ocean Data in Grid Framework

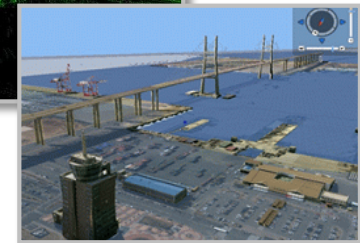
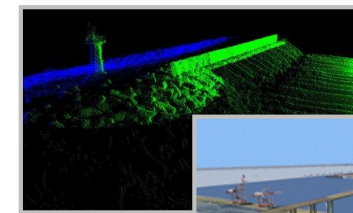
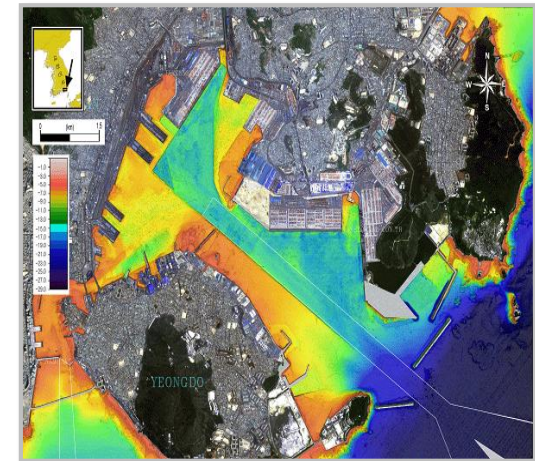
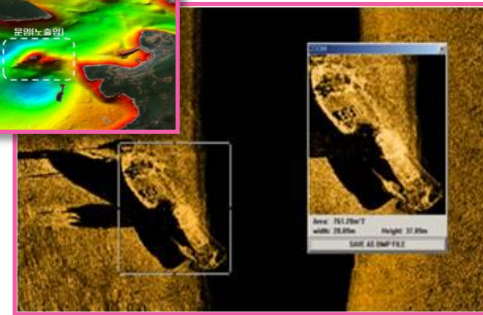
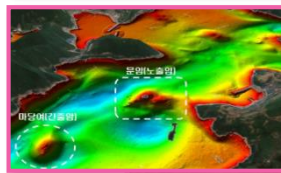
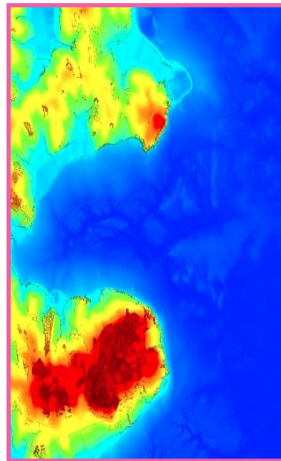
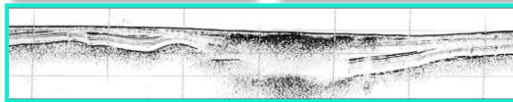
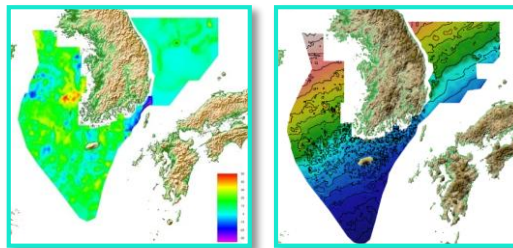
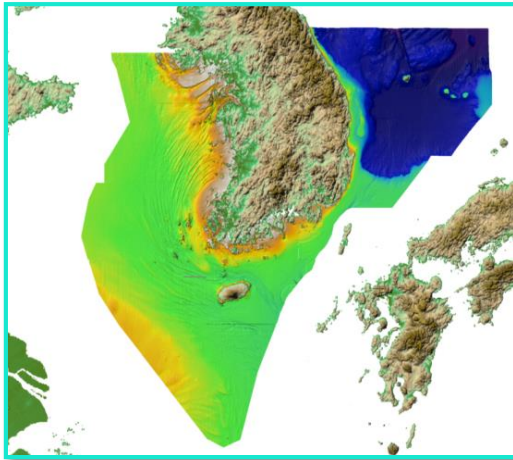


C 03



Hydrographic Survey

SURVEY AREA



■ EEZ 371 000 km²

■ Coastal waters 32 000 km²
■ Coastline Survey 15 000 km

■ Port area
- 30 Trade ports
- 29 Coastal ports
- 115 Fishing ports

HYDROGRAPHIC SURVEY WITH NEW TECHNOLOGY



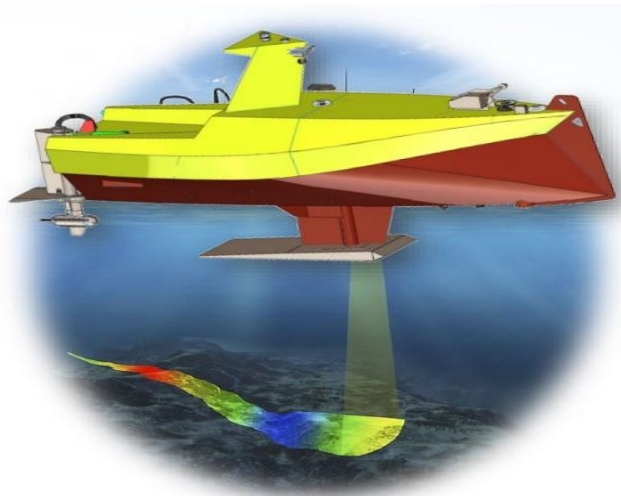
Unmanned surface vehicles

Pilot surveys using unmanned surface vehicles (USVs) were carried out around Dokdo.

KHOA launched two USVs named *KHOA 1* and *KHOA 2* in 2021 for surveys of port areas.



(L x W x H = 4.5 x 1.6 x 3.2 m)



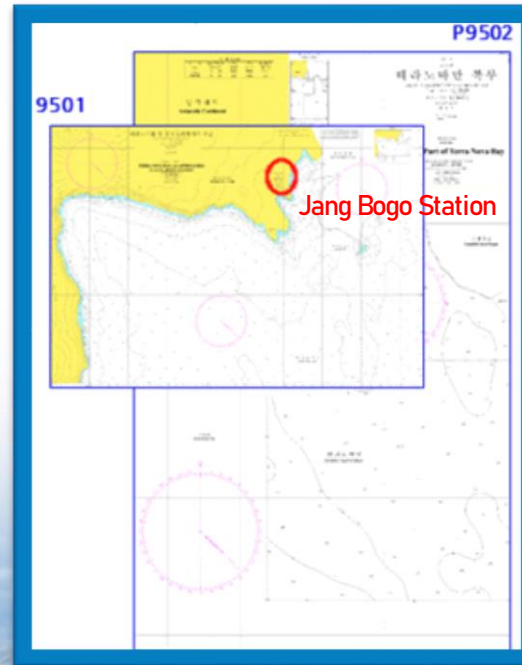
(L x W x H = 1.68 x 0.8 x 1.3 m)

ANTARCTIC HYDROGRAPHIC SURVEY



Hydrographic survey

Supports polar research activities and safety navigation by offering various information (seabed, depth, coastline, tide, etc.) obtained from hydrographic surveys.



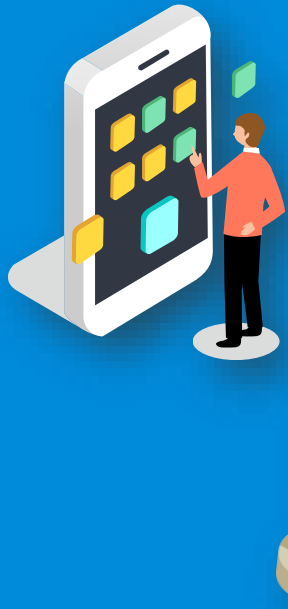
Nautical charts

1 INT (9013) & 1 national chart released near the Jang Bogo Station

3 national charts released near the King Sejong Station – one more to be released by 2023



C04



Nautical Chart

NAUTICAL CHARTS



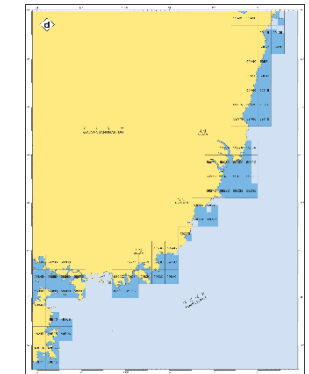
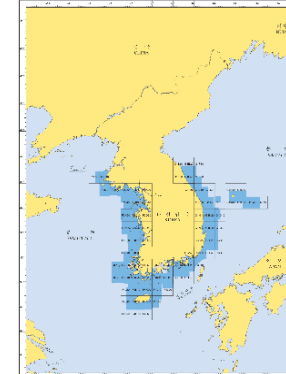
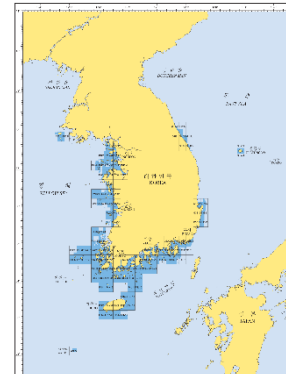
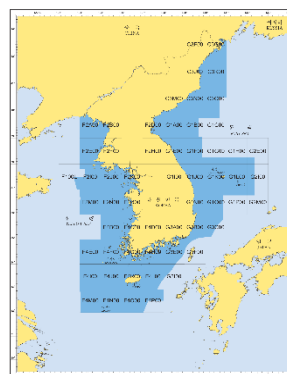
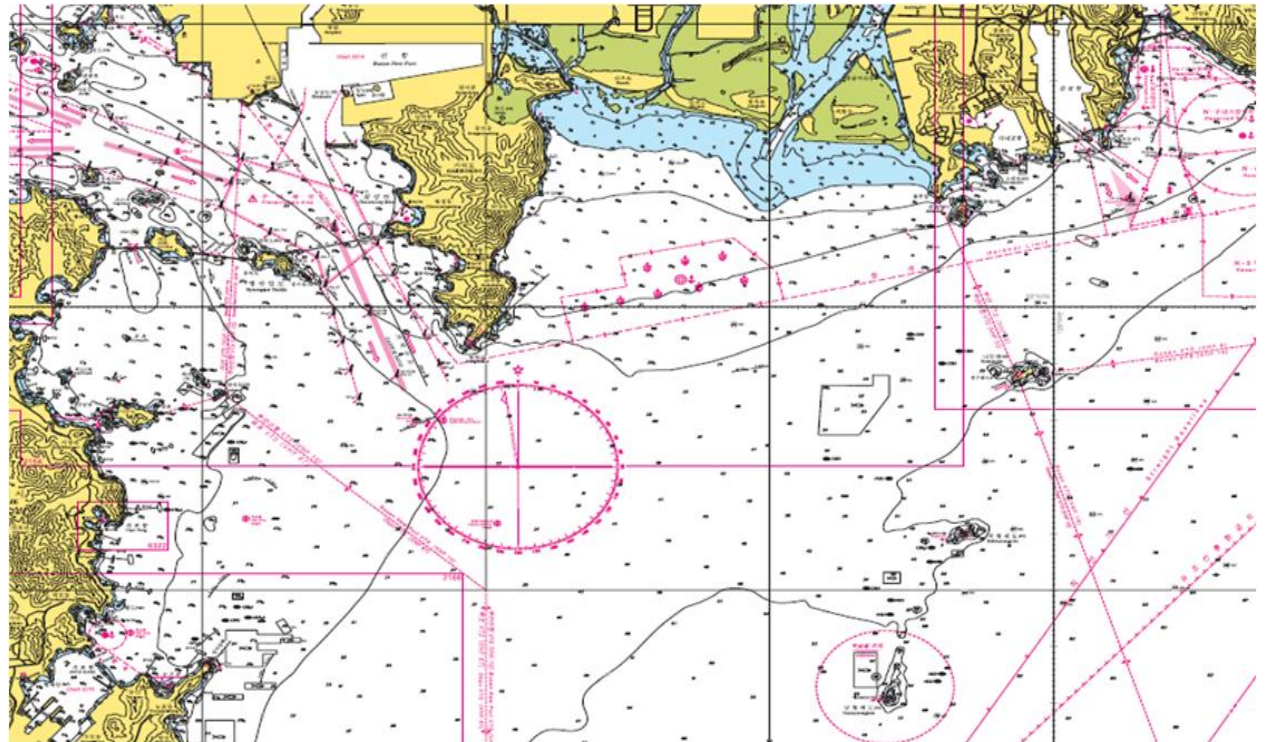
S-57 ENC: 774 cells ✓

S-101 ENC: 1 321 cells ✓

(e-Navigation test service in Korean waters)

Paper charts: 403 ✓

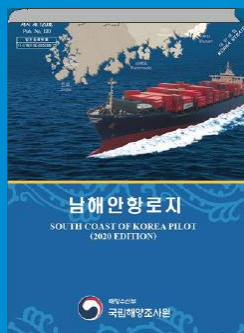
International (INT) charts: 21 ✓



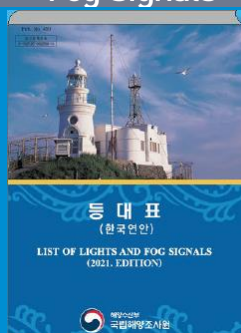
NAUTICAL PUBLICATIONS



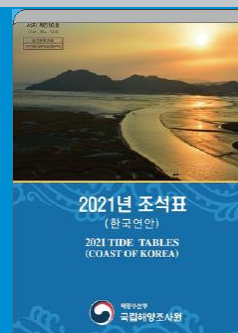
Pilot



List of Lights and Fog Signals



Tide Tables



Nautical Almanac



Tidal Current Tables / Charts



Distance Tables

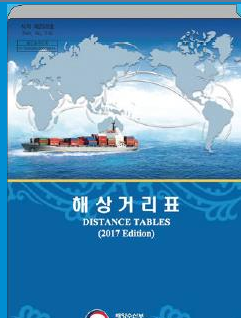
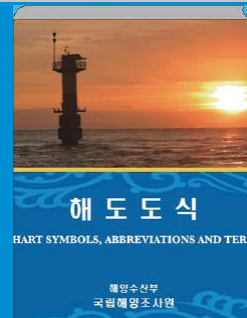
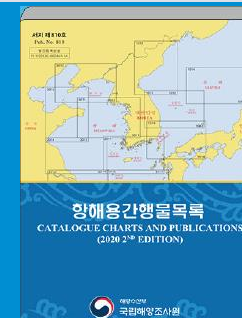


Chart Symbols, Abbreviations and Terms



Catalogue of Charts and Publications

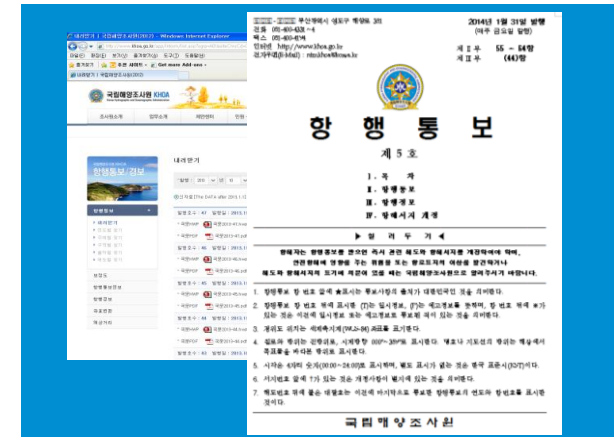
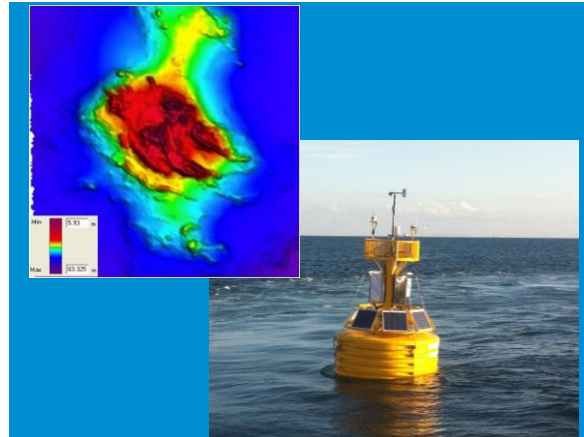


NOTICES TO MARINERS & NAVIGATIONAL WARNINGS



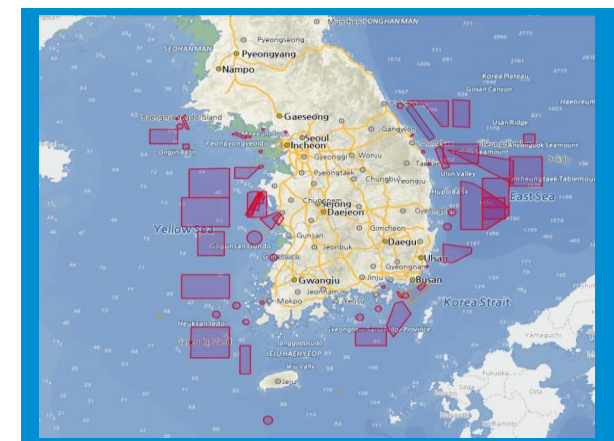
Notices to Mariners

Provide information on the safety of navigation – Light buoy, rocks, surveying plans, etc.



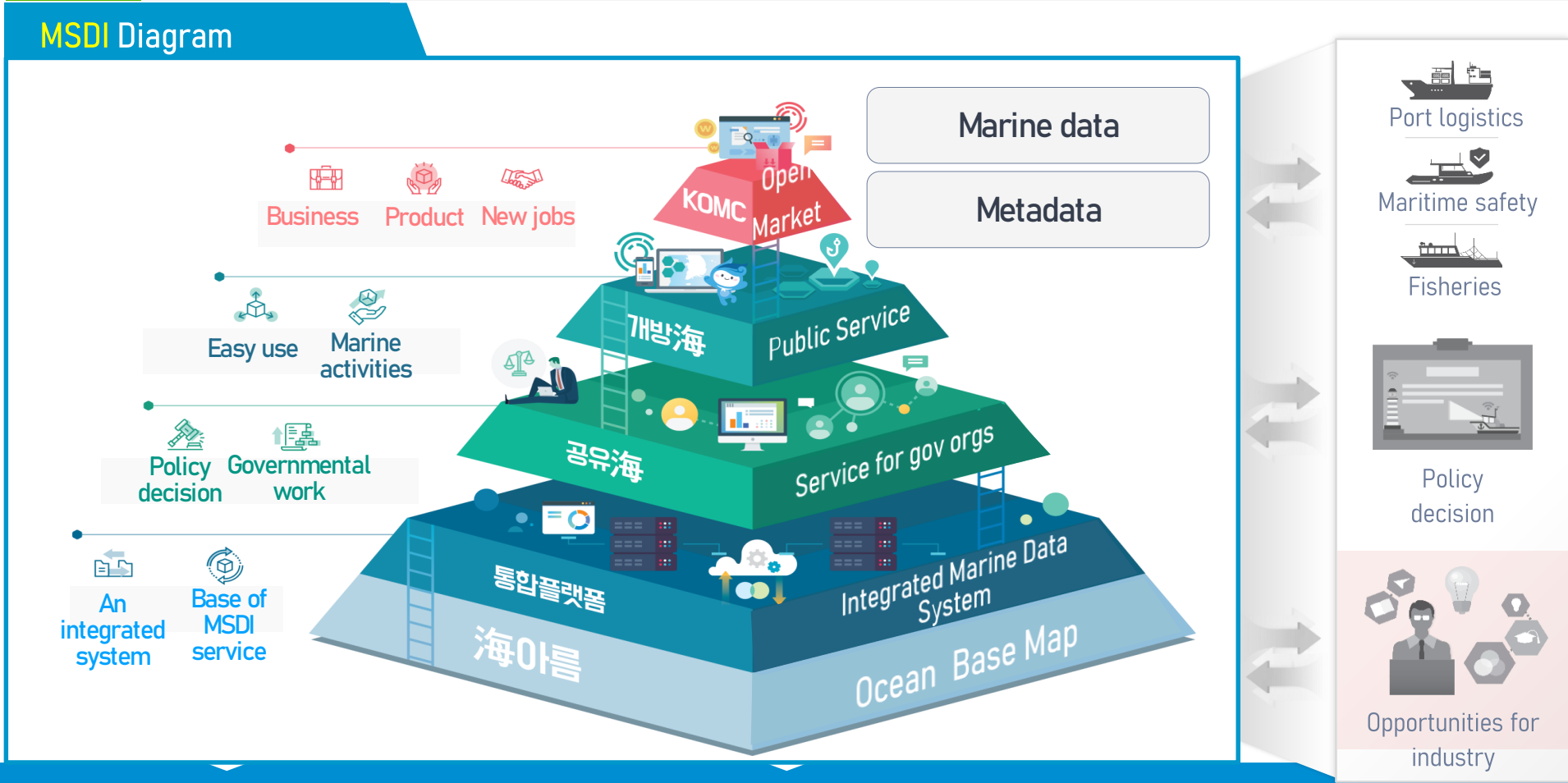
Navigational Warnings

Inform special cases among NTMs – Firing exercise area and plans



We inform mariners of all that happens on the sea for the safety of navigation

MARINE DATA APPLICATIONS



We run an MSDI service platform and marine data is serviced through a map-based service called “Gaebanghae” where data can be searched or downloaded. The use of data is maximised through an open API.

INTERNATIONAL COOPERATION



Work with Hydrographic community

S-100 Open Online Platform

KHOA S-100 Viewer

Bilateral cooperation

ODA projects (Georgia, Indonesia, Fiji, Philippines)

Bilateral cooperation with US, UK, and Portugal



Capacity Building

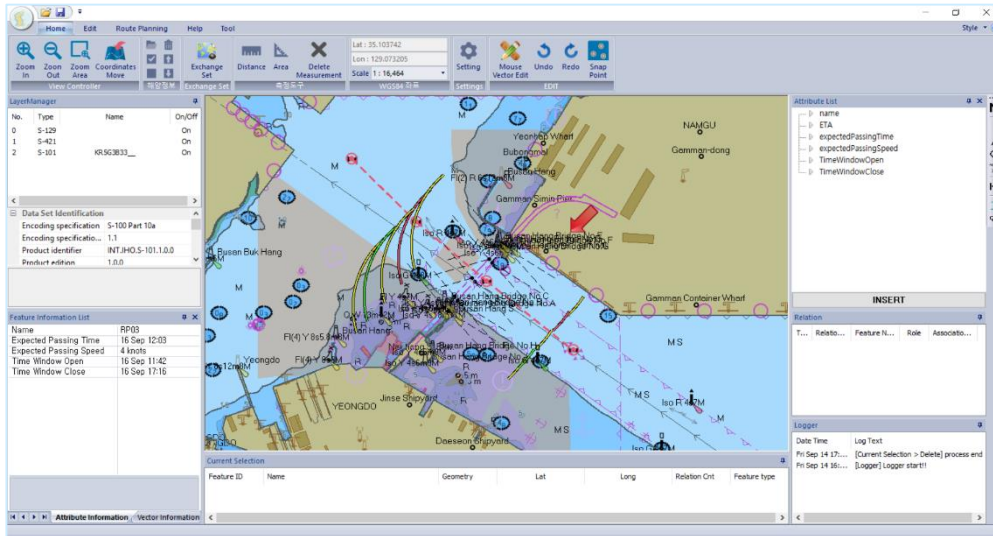
Training programmes for the IHO

IHO e-Learning Center

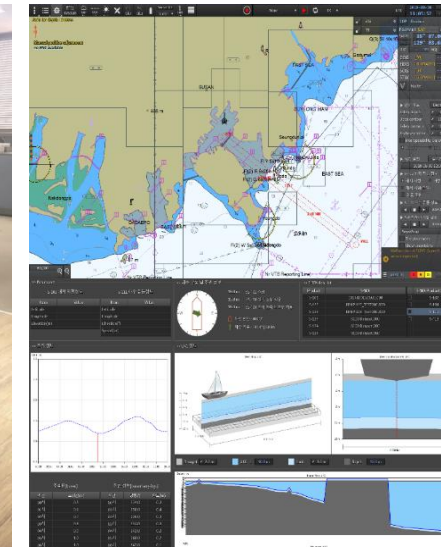


KHOA S-100 TESTBED

KHOA S-100 VIEWER



KHOA TESTBED



CAPACITY BUILDING



Holding various capacity building programmes to support developing countries to improve hydrographic capabilities

- Category A MS Hydrographic Science at the University of Southern Mississippi
- Category B Hydrographic Surveying & Nautical Cartography Programmes



C
06



Ocean Satellite

NATIONAL OCEAN SATELLITE CENTER



History



2019.5.

NOSC established



2020.2.

GK-2B launched

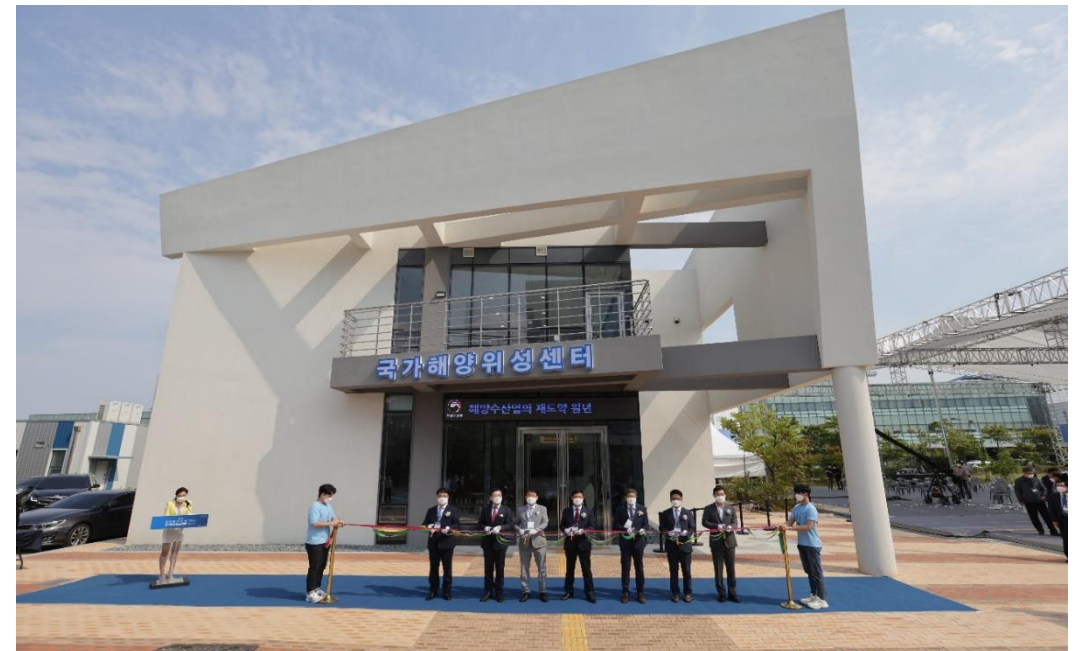


2020.10.

GK-2B service commenced

Goals

- Establishing efficient national satellite policy
- Developing new applications of the satellites
- Improving the satellite policy

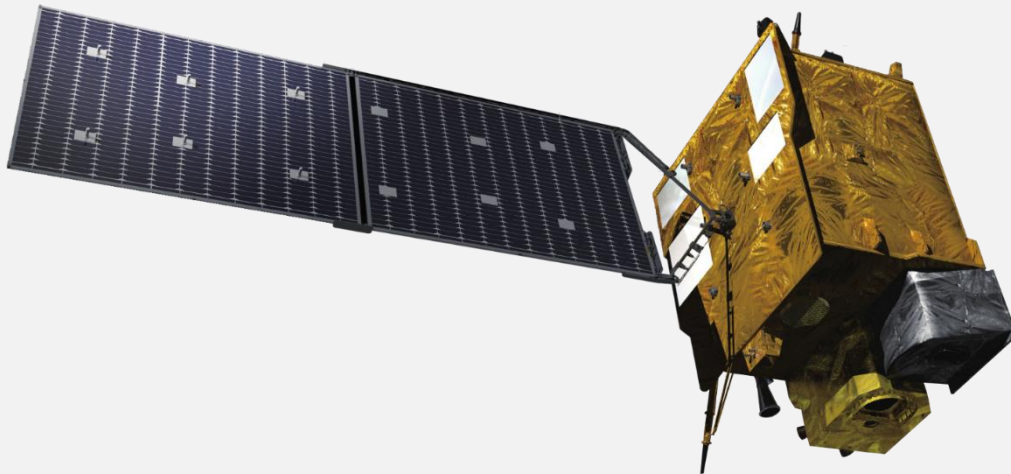


NATIONAL OCEAN SATELLITE CENTER



GEO-KOMPSAT-2B (GK-2B)

- ❖ Geostationary satellite orbiting at the altitude of approximately 36 000 km above the equator for ocean/environmental observation.



▪ Size (W x L x H)	2.9 m x 3.8 m x 8.8 m
▪ Weight	3.4 t
▪ Altitude	36 000 km (GEO)
▪ Expected working year	10 years
▪ Launch date	19 February 2020
▪ Coverage	Half the Earth (near ROK)
▪ Spatial Resolution	250 m
▪ Temporal Resolution	10 times/day
▪ Spectral Resolution	13 bands

SATELLITE SERVICE

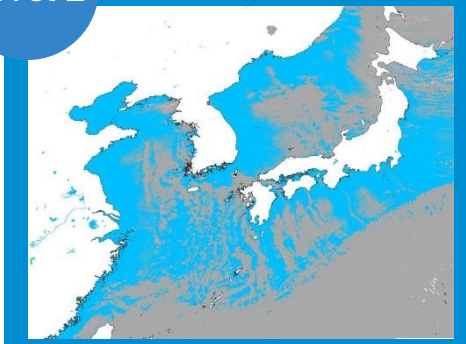


Level 1



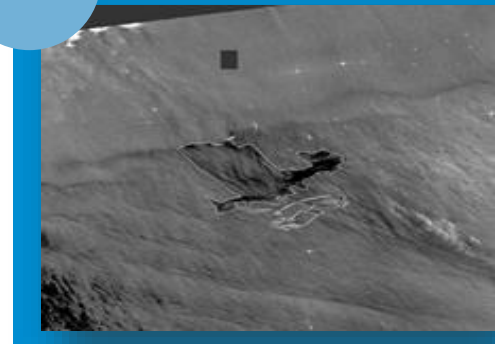
Standard image

Level 2



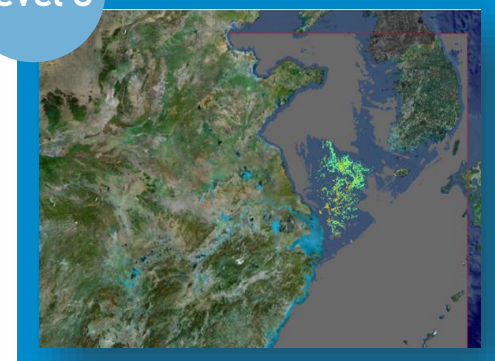
26 kinds of product

Level 3



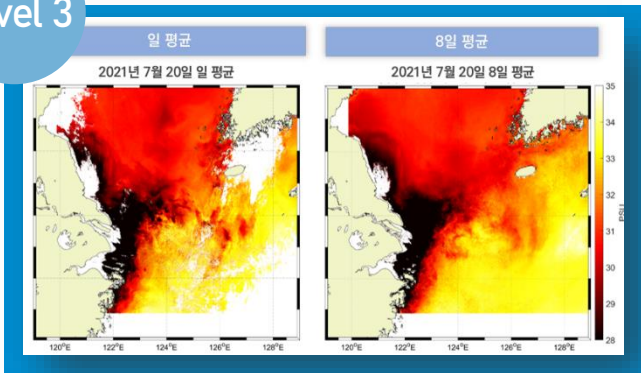
Oil spill

Level 3



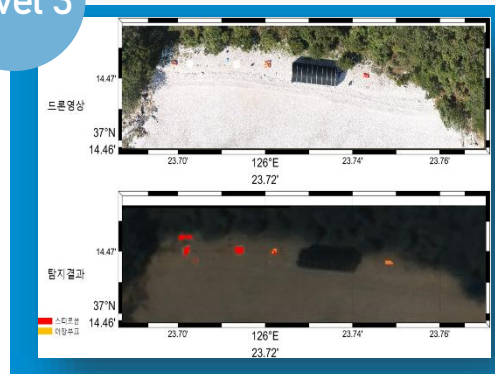
Sargassum horneri

Level 3



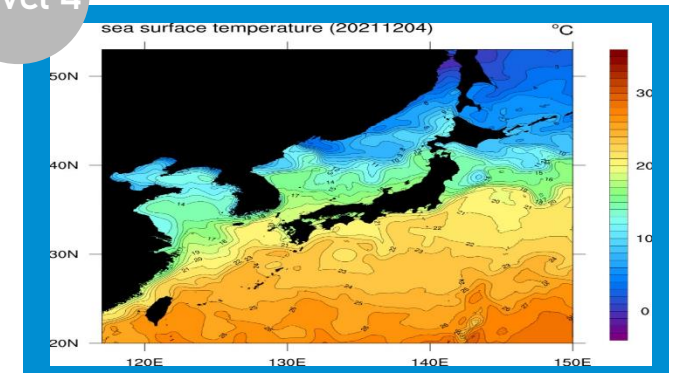
Sea surface salinity (SSS)

Level 3



Marine debris

Level 4



Sea surface temperature (SST)



Thank you
