PICES XIV Session10: Marine data management and delivery systems to support ecosystem monitoring
Vladivostok, October 4, 2005

Research and Development of ubiquitous information services for integrated fisheries activities in the offshore around Japan

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Contents

- Background
- Objectives
- ubiquitous Information System
- Overview of Information Transfer
- Hierarchical Product Structure
- WebGIS and Onboard GIS
- Concluding Remarks

Operational Fisheries Oceanography

Research and Development

-Models
-Technology
(Observing/sampling)

-Raw data
-Statistics
-etc

Operational Fisheries Oceanography

-*Measurements:* systematic, long-term, routine
-*Interpretation of data:* fast(near real-time)
-*Dissemination of results:* rapid, e.g. internet

-Products

-Funding
-Data
-Application

USERS

Governments, Regulatory Authorities,
Commercial Enterprises, Research Institutes

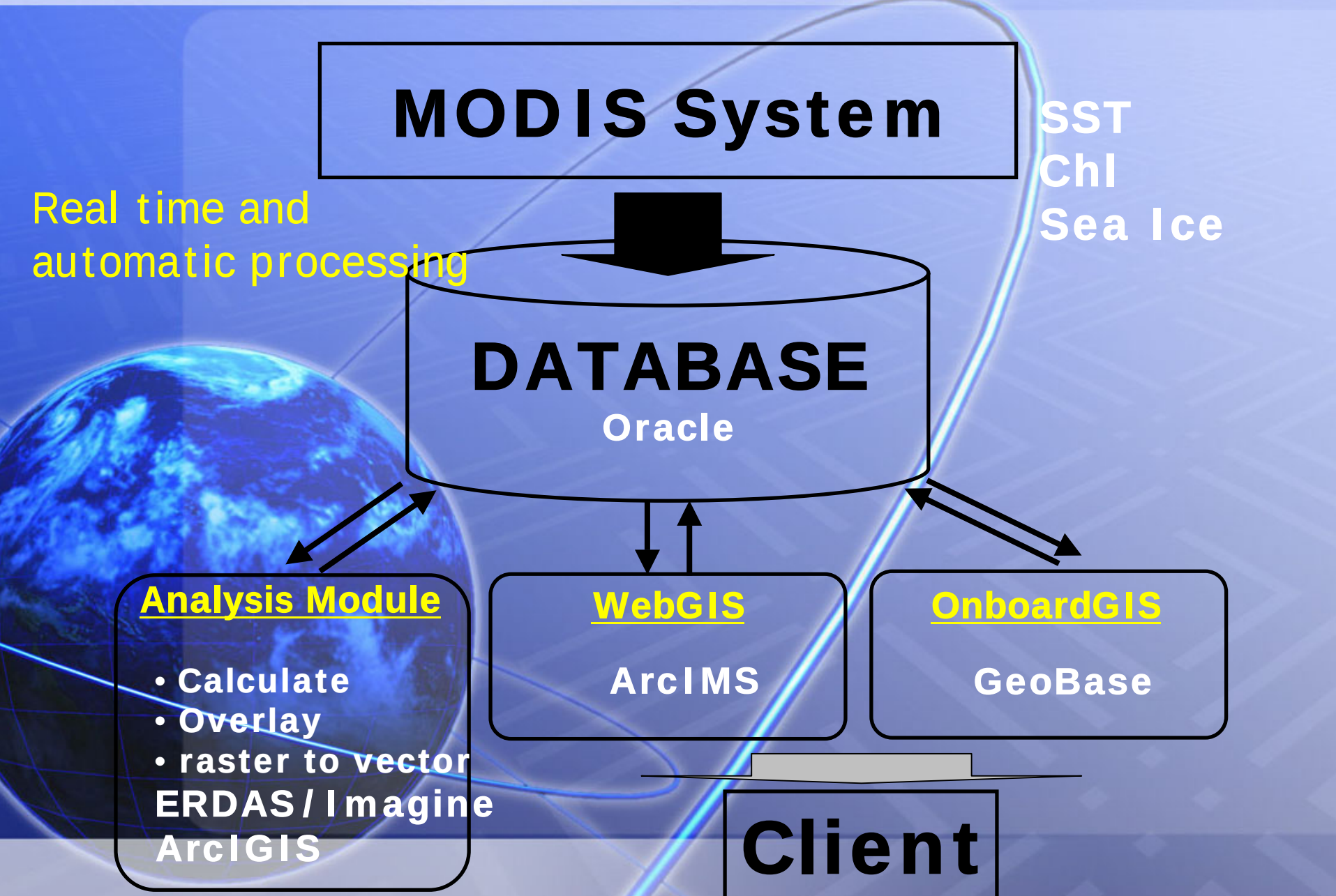
Objectives

For sustainable use and fisheries management……

- **To develop fisheries information system**
- **To produce high value-added fisheries oceanographic information**
- **To provide such information in near real time in anytime and at anywhere (Ubiquitous)**

…..using remote sensing and GIS

Fisheries Information System



Characteristics

For sustainable use and fisheries management……

- WebGIS(ArcIMS) and Onboard GIS (GEOBASE)
- Ubiquitous information system using satellite communication (WIDE-STAR and SUPERBIRD)
- High value-added fisheries oceanographic information (Hierarchical Structure)
- Near real time with automatic data processing (ERDAS/Imagine and ArcGIS) and data base management system (ORACLE)

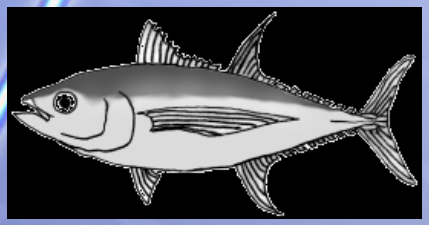
…..using remote sensing and GIS

Overview of Information Transfer

Target Species

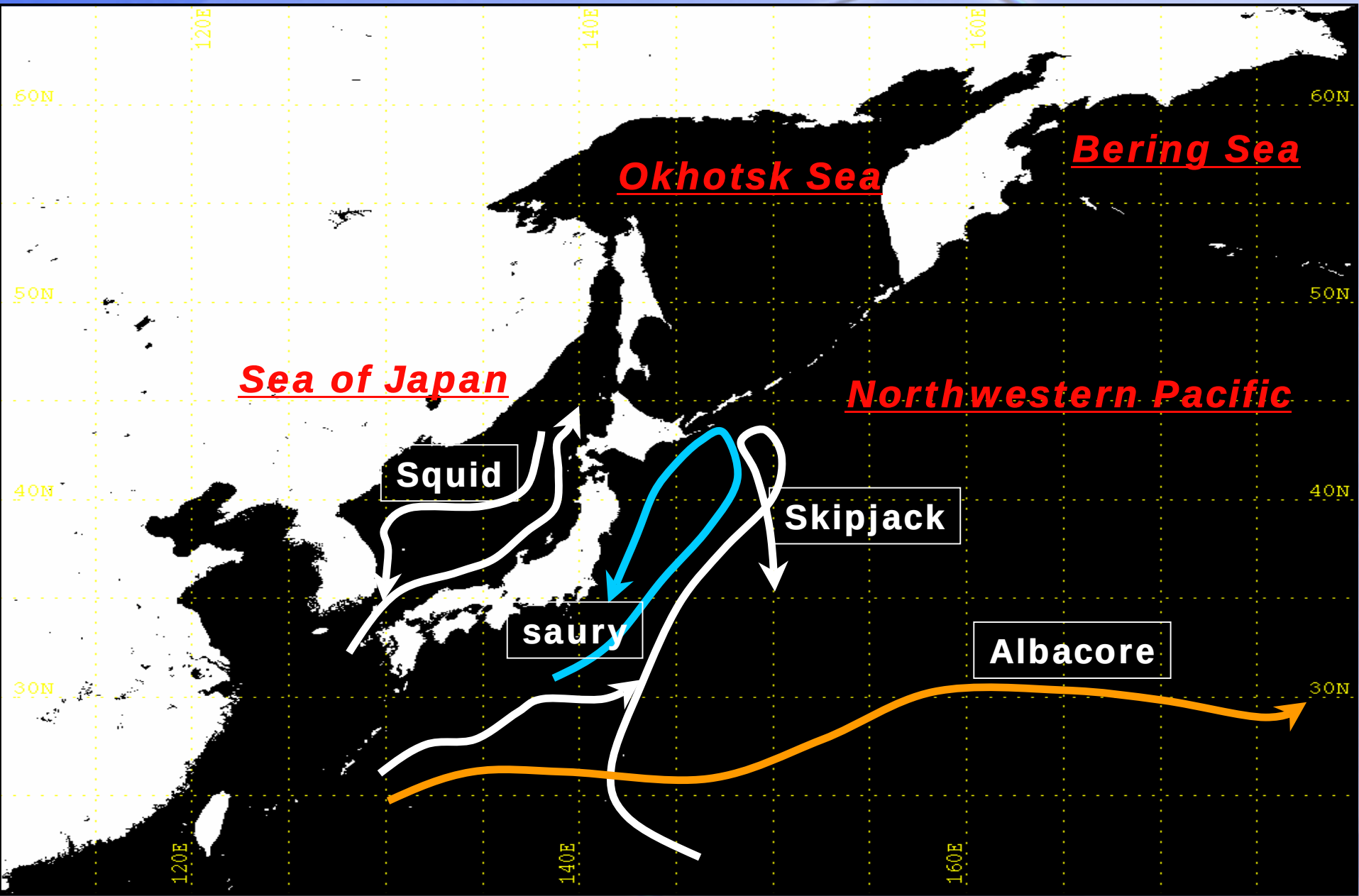
- Japanese common Squid (*Todarodes pacificus*)
- Pacific Saury (*Cololabis saira*)

- Albacore (*Thunnus alalunga*)

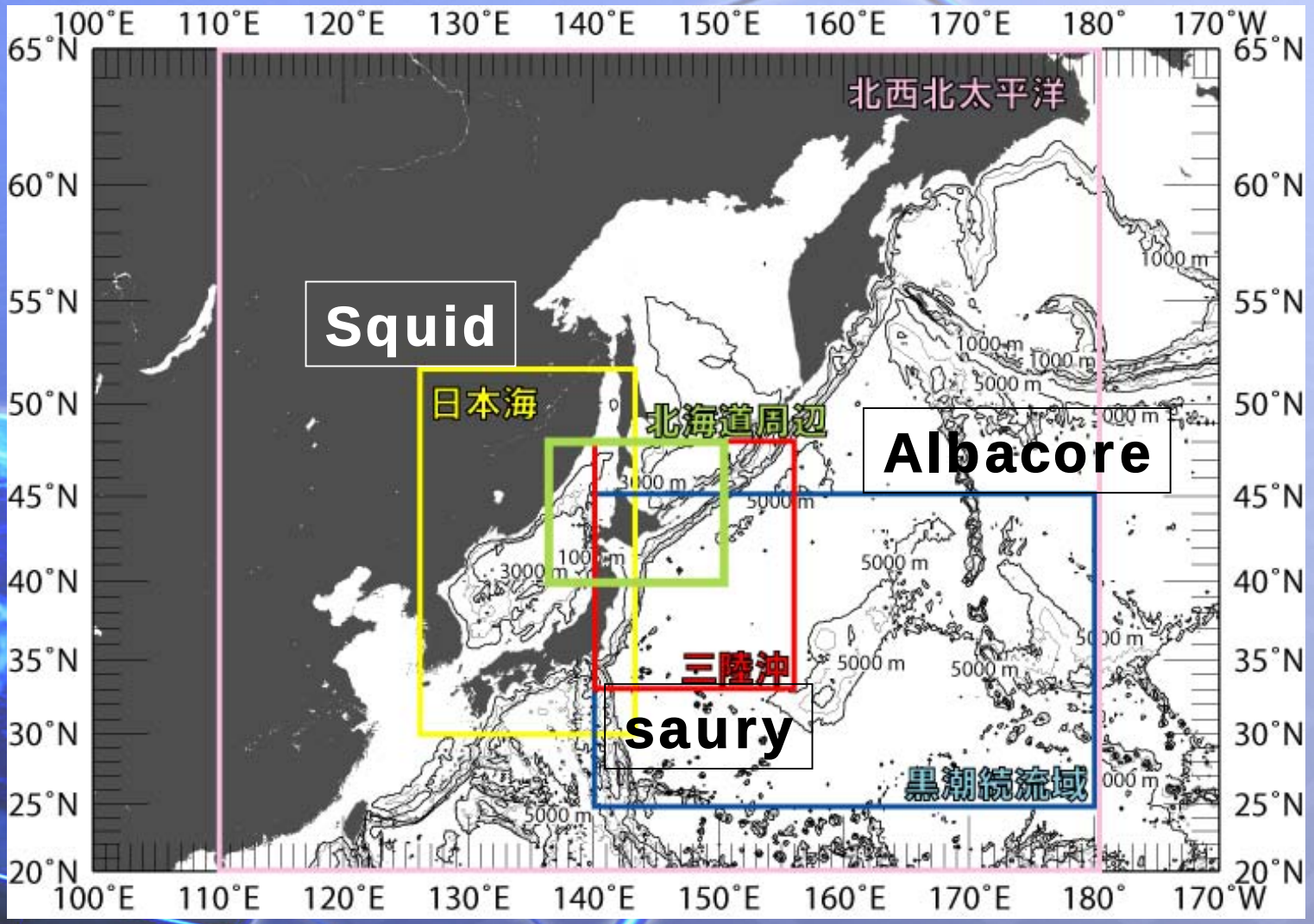


- Skipjack (*Katsuwonus Pelamis*)

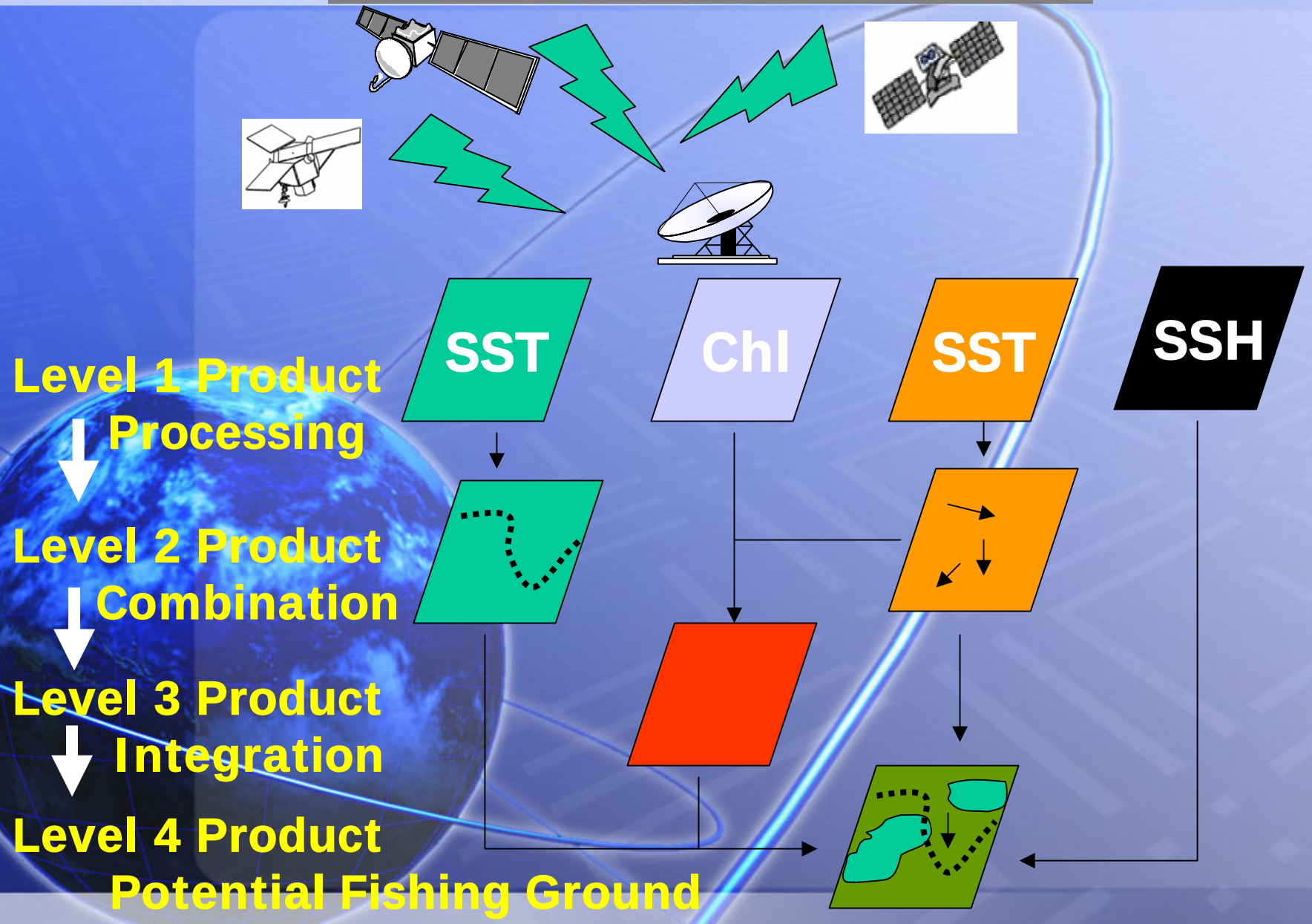
Distribution and Migration



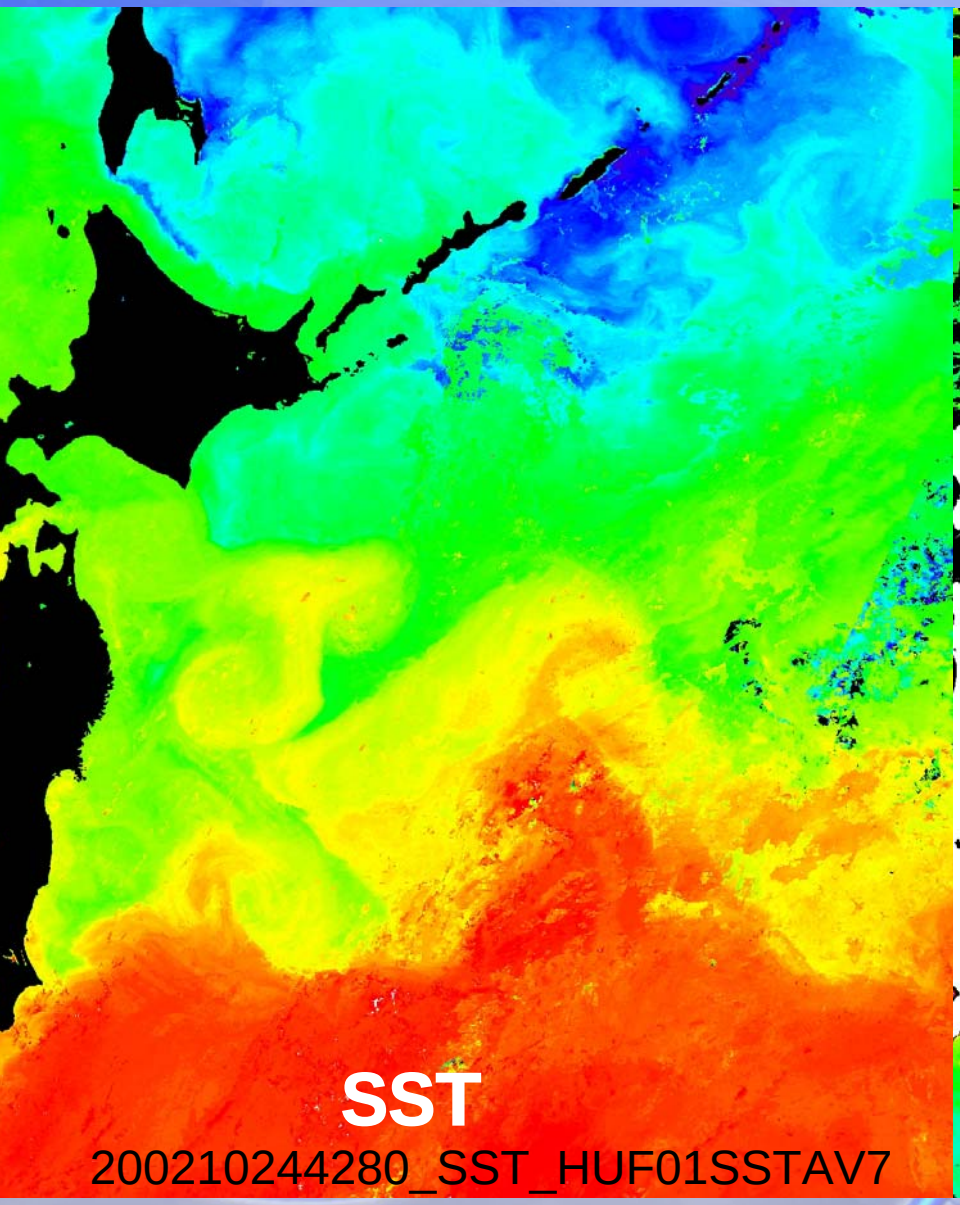
Service Regions

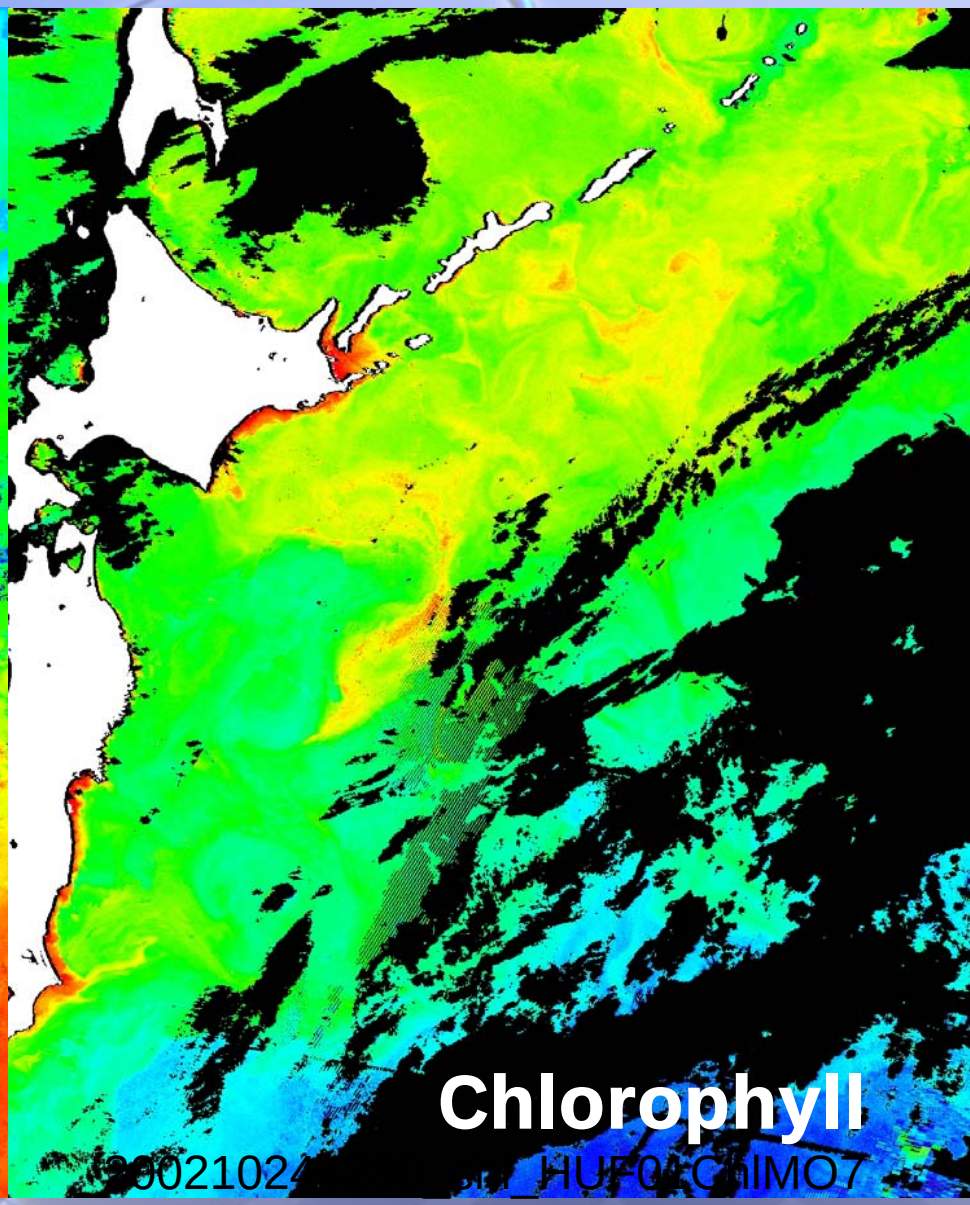


Hierarchical Structure



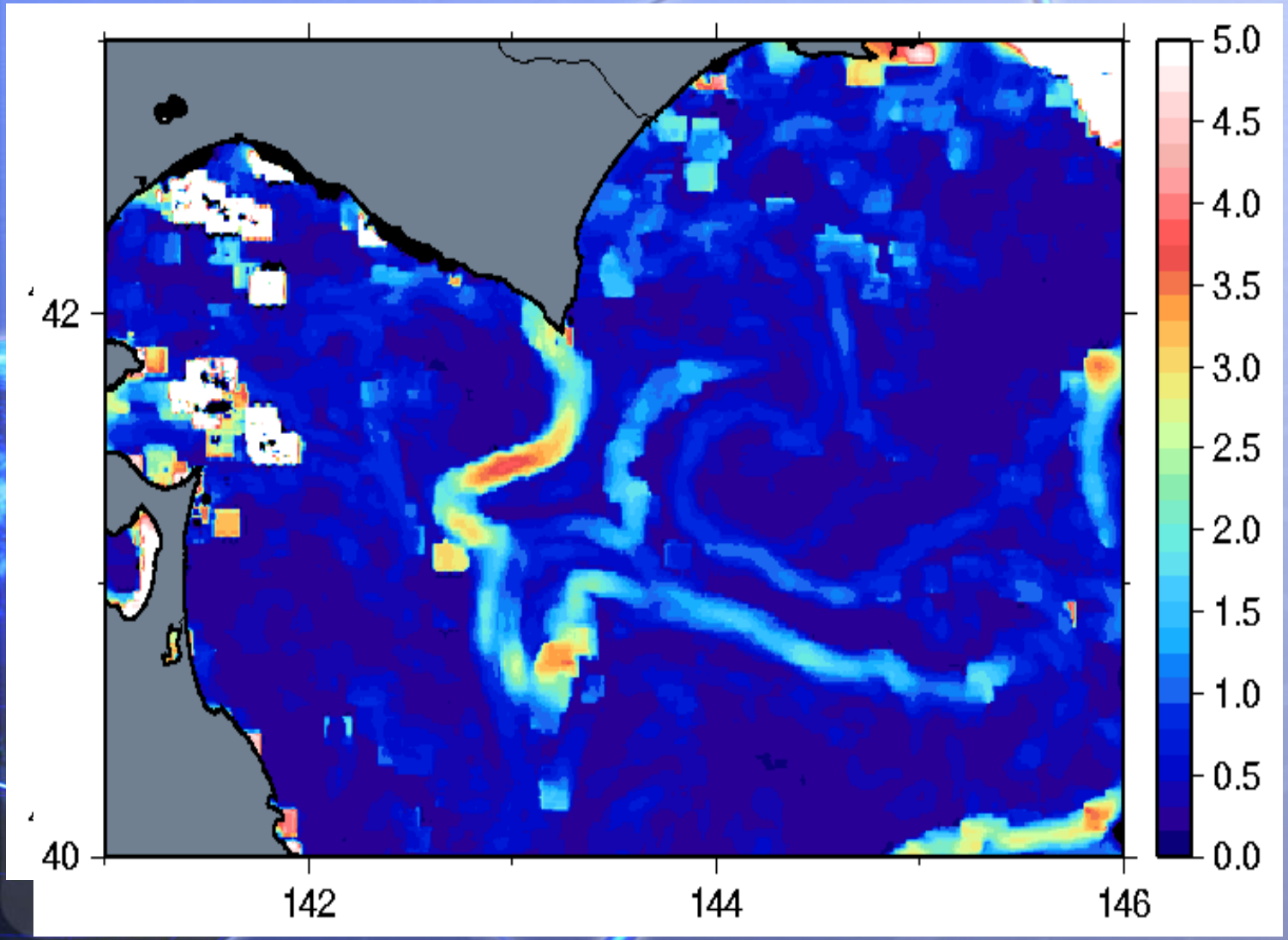
Level 1 Product



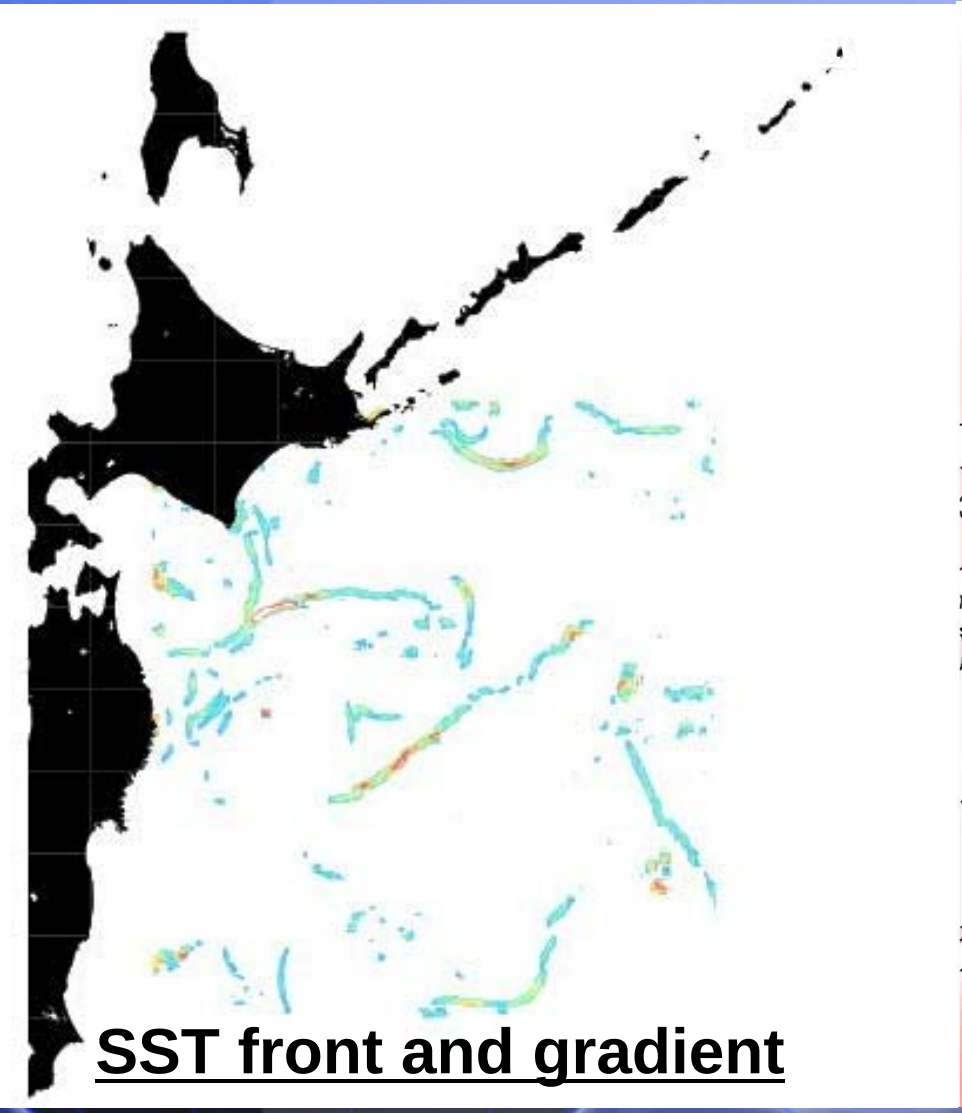


Level 2 Product

SST front and gradient

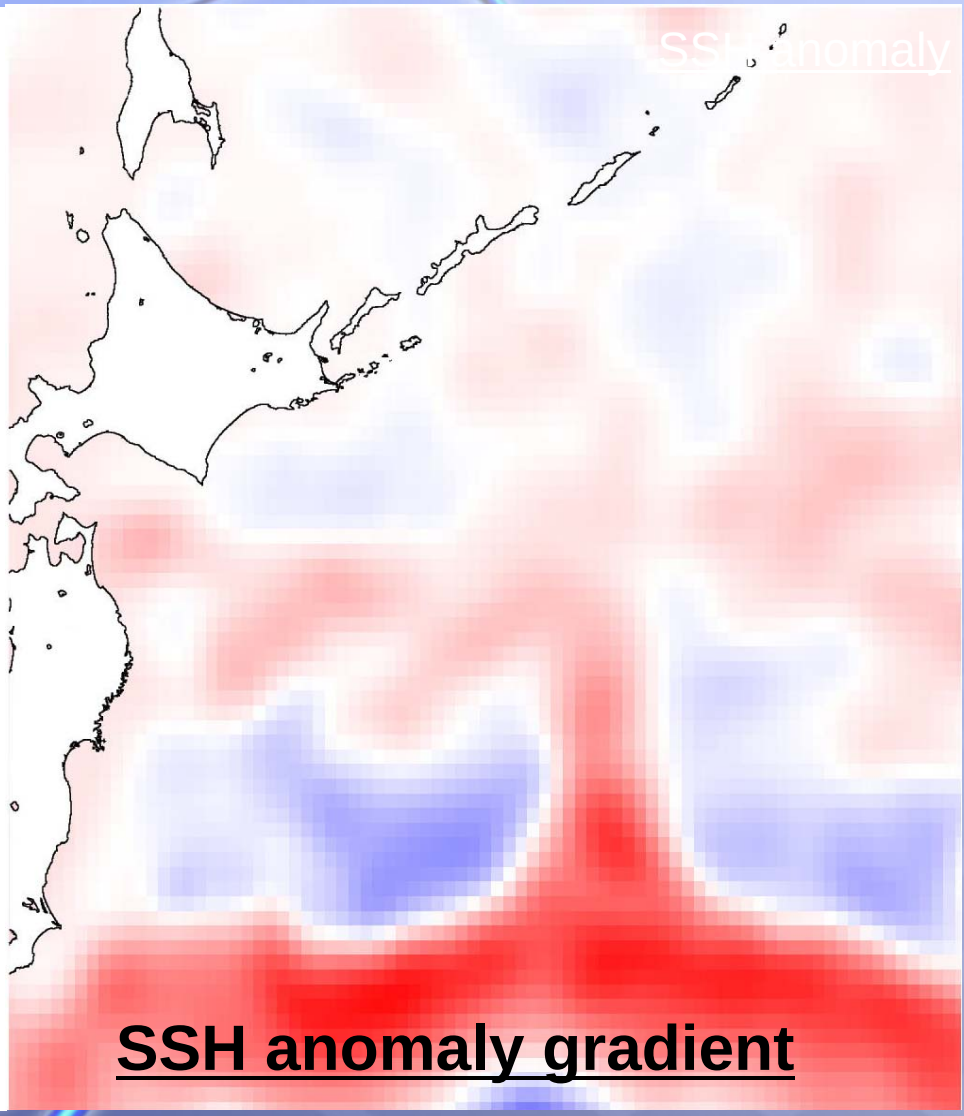


Level 2 Product



SST front and gradient

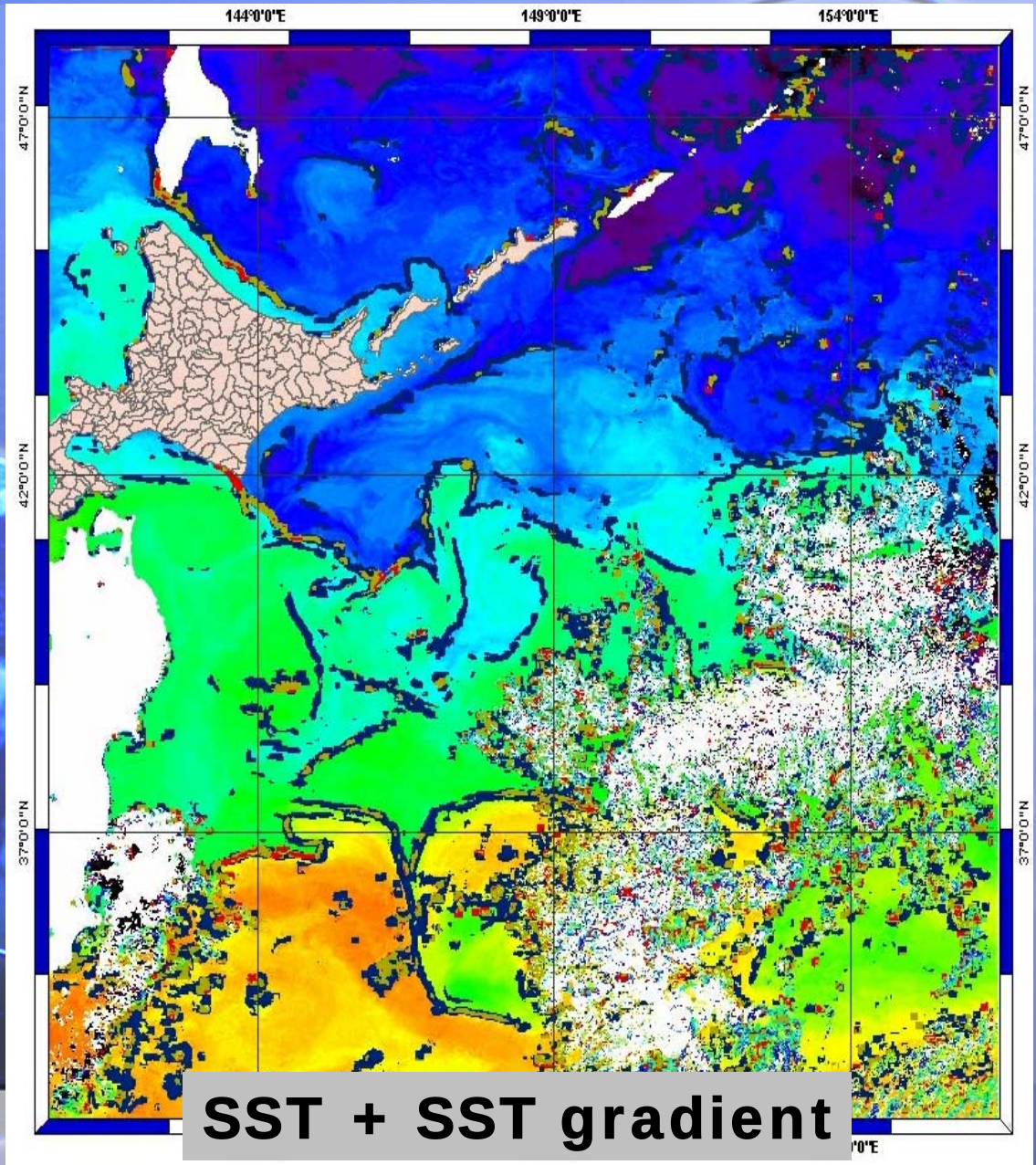
20021005_SSTgrad_HUF02SSTAV2.jpg



SSH anomaly gradient

20022752002281_ano.jpg

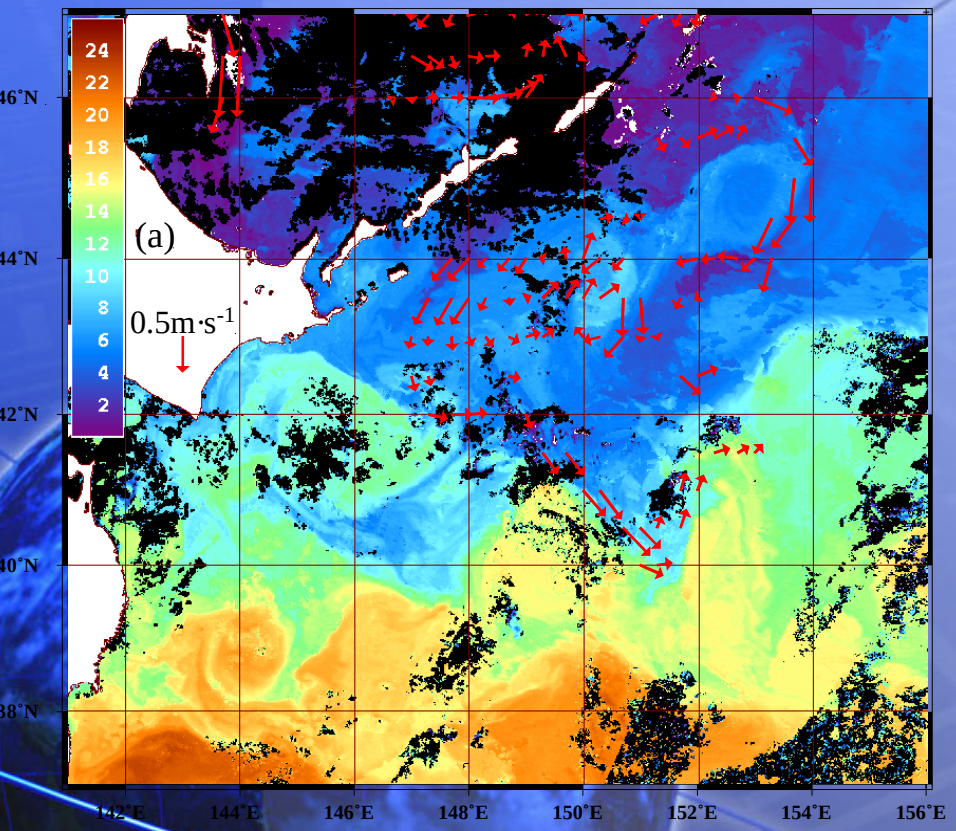
Level 3 Product

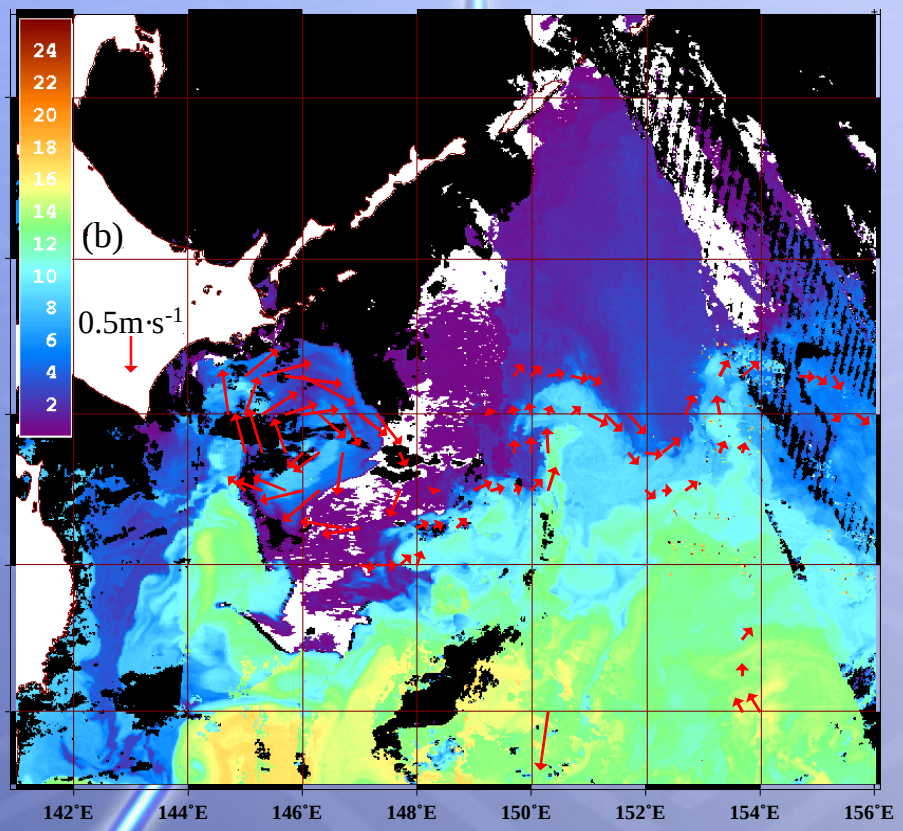


SST + SST gradient

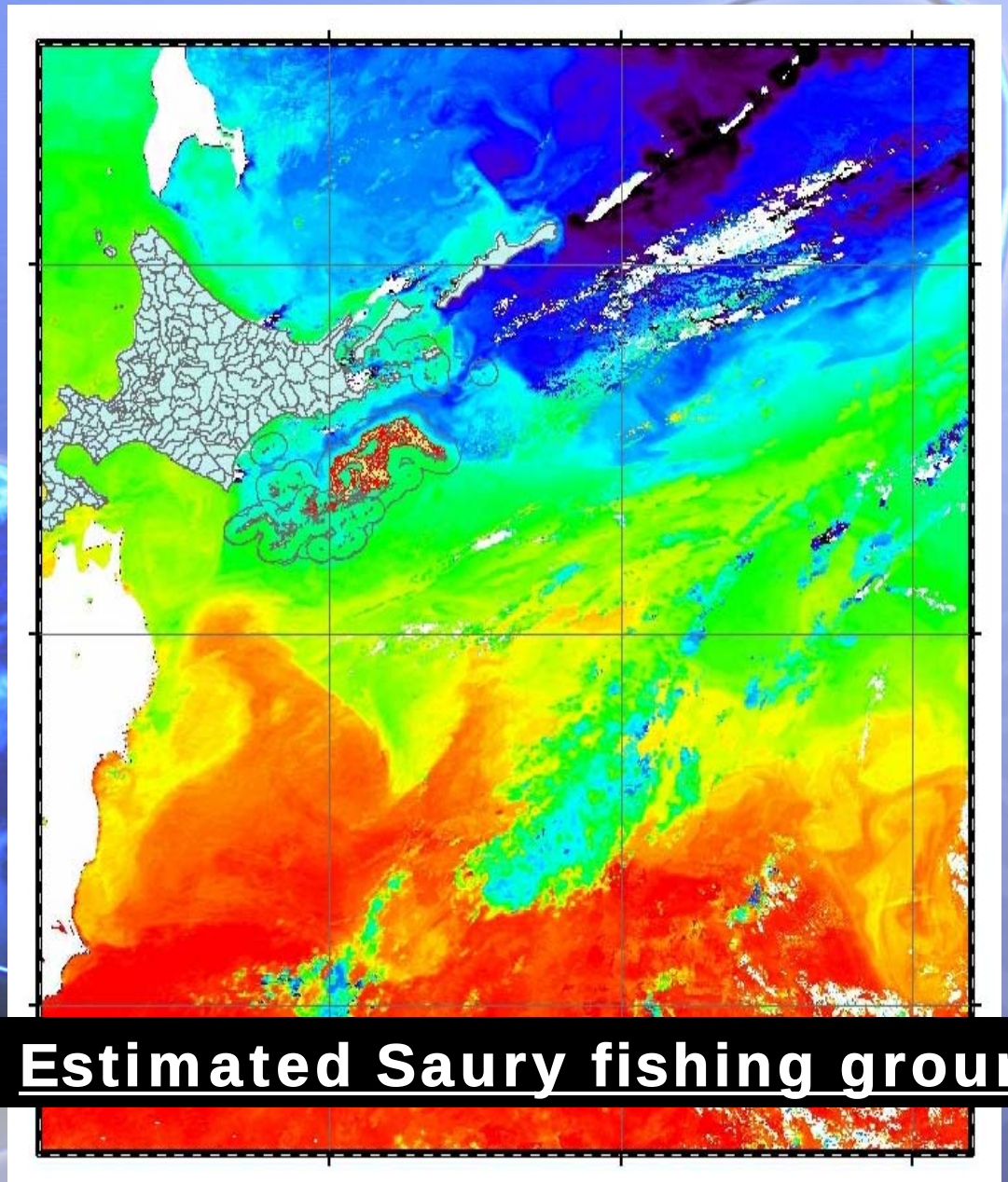
Level 3 Product

SST + current vector map





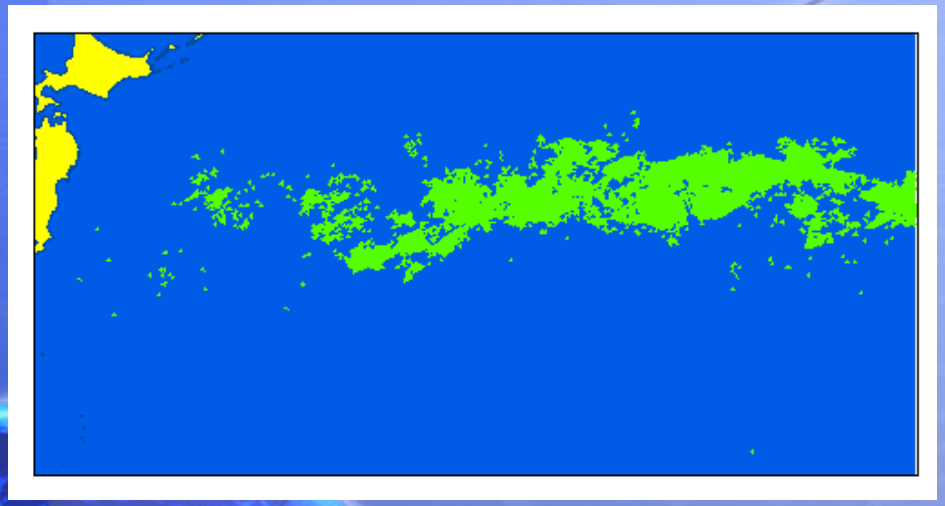
Level 4 Product



Estimated Saury fishing ground

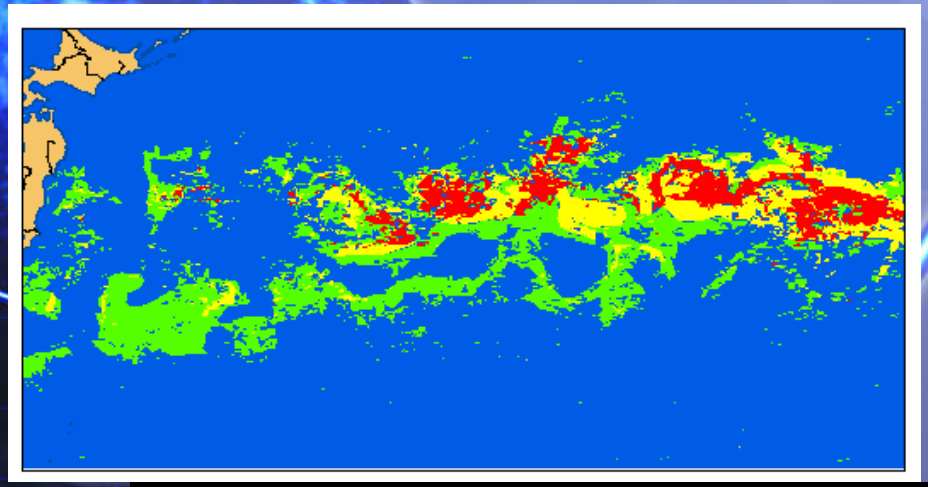
Level 4 Product

Prediction map （Simple Method)



Land (Japan)
Less productive habitat
Predicted habitat (potential habitat)

Prediction map （Probability index Method)

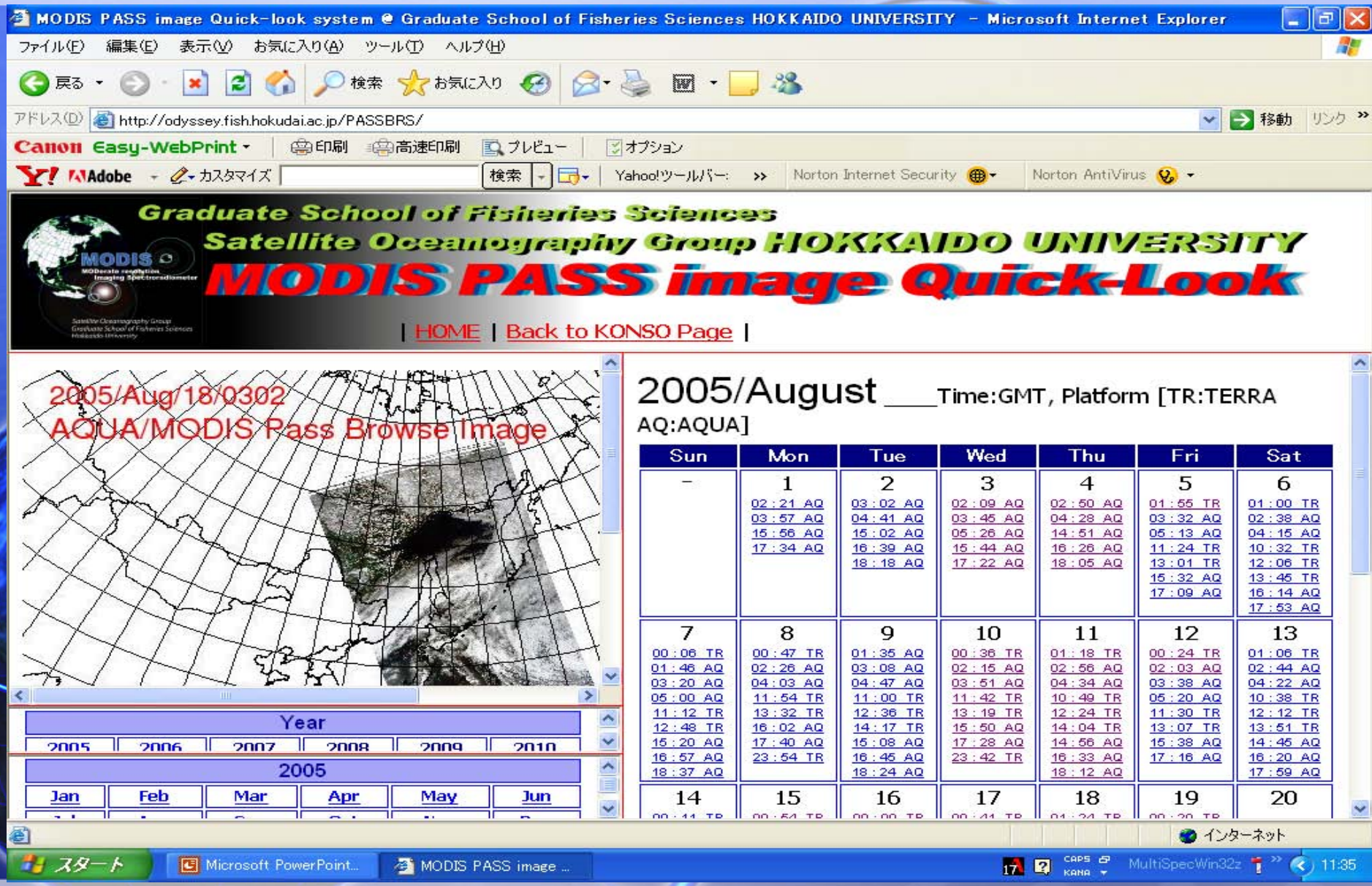


Probability index (%) & Habitat types
0 – 55.0 : POOR
55.0 – 67.5 : FAIR
67.5 – 80.0 : GOOD
80.0 – 100.0 : EXCELLENT

Estimated Albacore fishing ground

Top page of our WEB

MODIS PASS Browse Image



(http://odyssey.fish.hokudai.ac.jp/PASSBRS)

Top page of our WEB

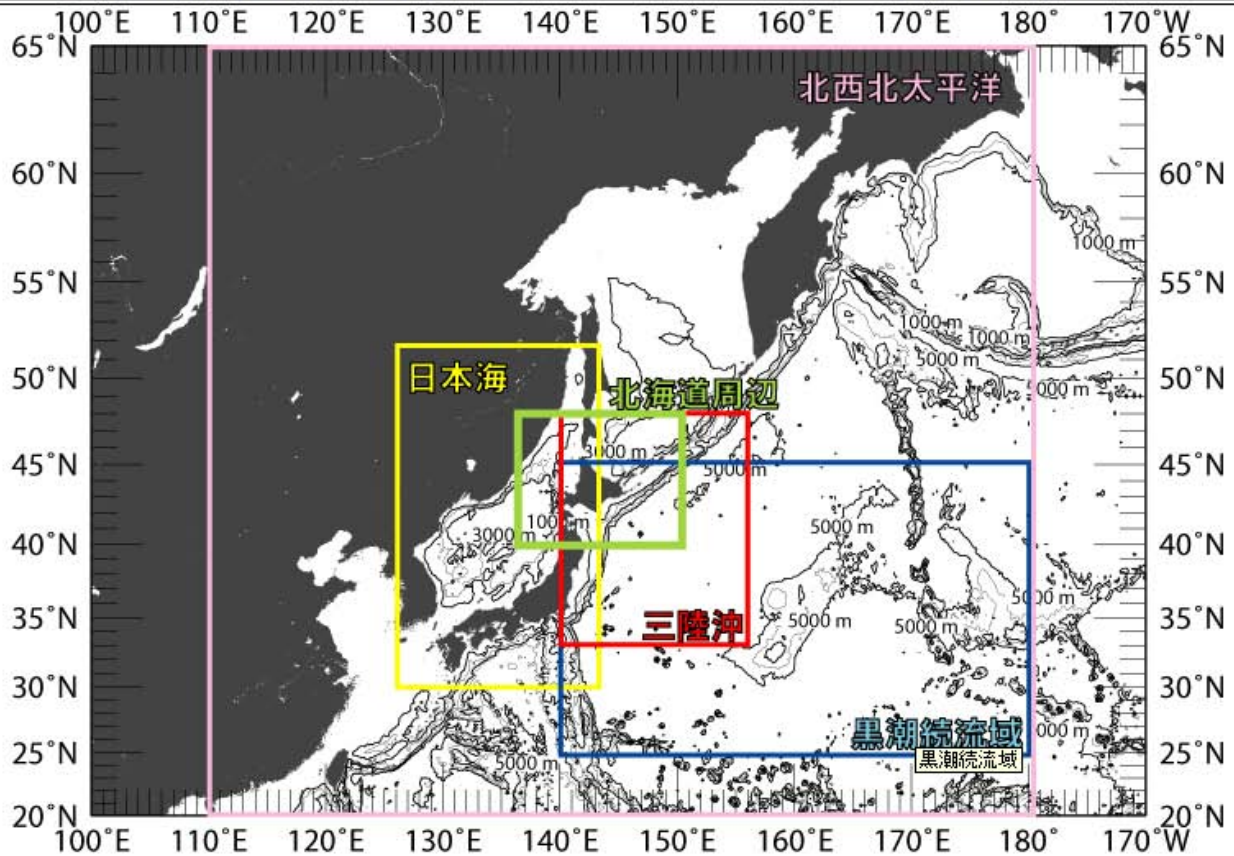
Client Management Page
User ID and Password

WebGIS 水産海洋情報サービス

Fisheries Oceanographic Information Services

| 地域コンソーシアムページ | MODIS PASS Browse ページ

ご希望の海域をクリックしてください。　サンプルプロダクトはこちらへ



海域	緯度経度
三陸沖	48° N-33° N:140° E－156° E
北海道周辺海域	48° N-40° N:136° E－150° E
日本海	52° N-30° N:126° E－143° E
黒潮続流域	45° N-25° N:140° E－180° E
北西北太平洋	65° N-20° N:110° E－180° E

WebGIS 水産海洋情報サービス

Fisheries Oceanographic Information Services

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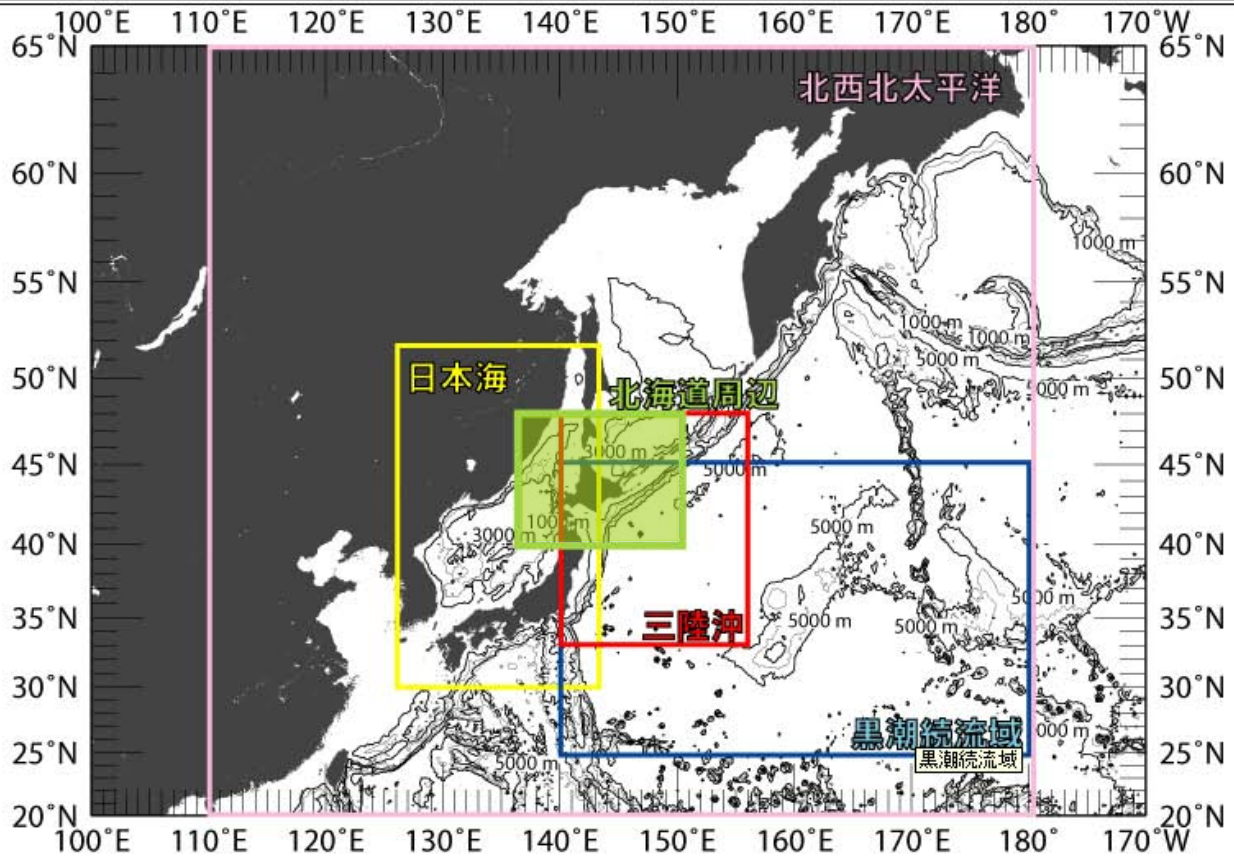

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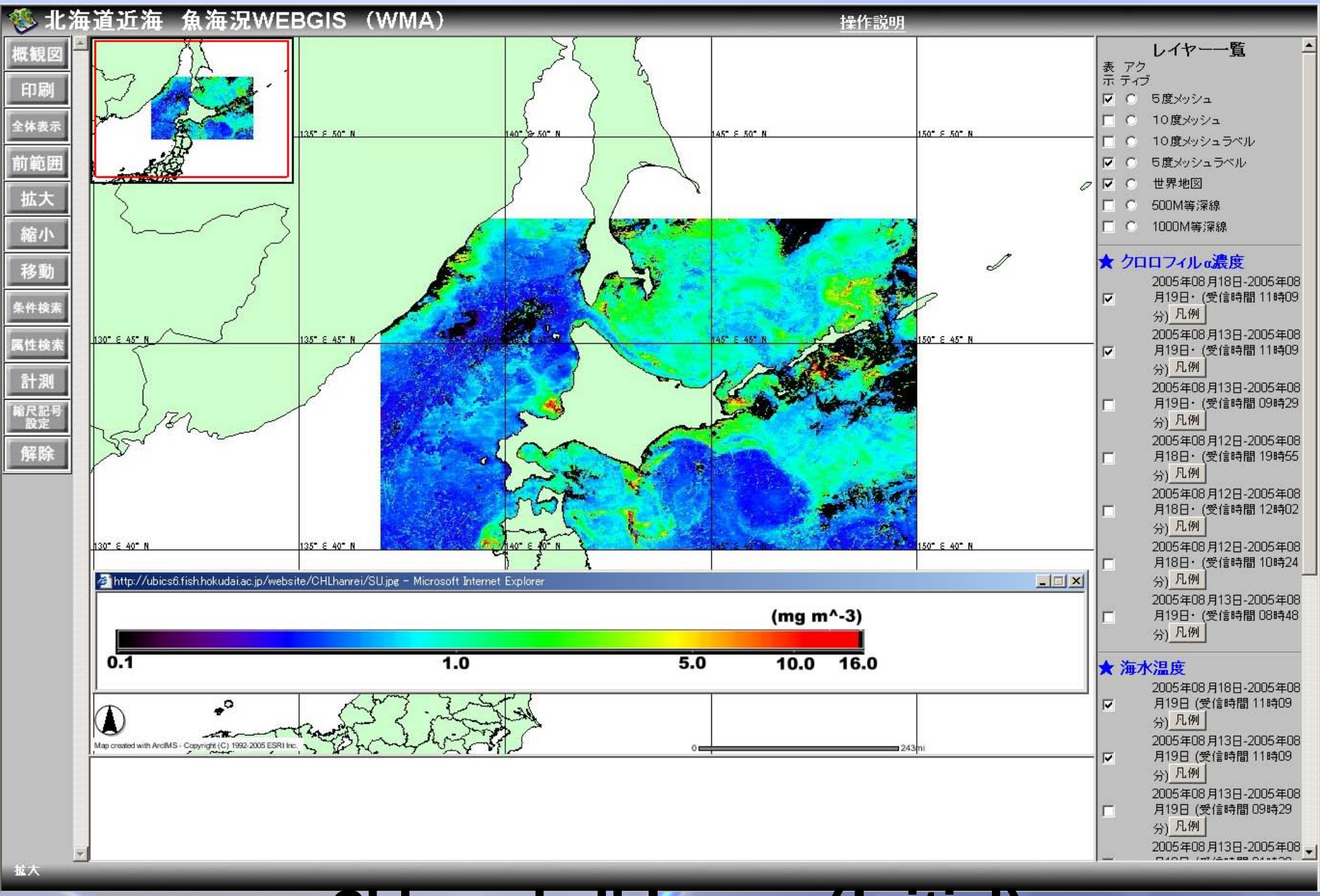
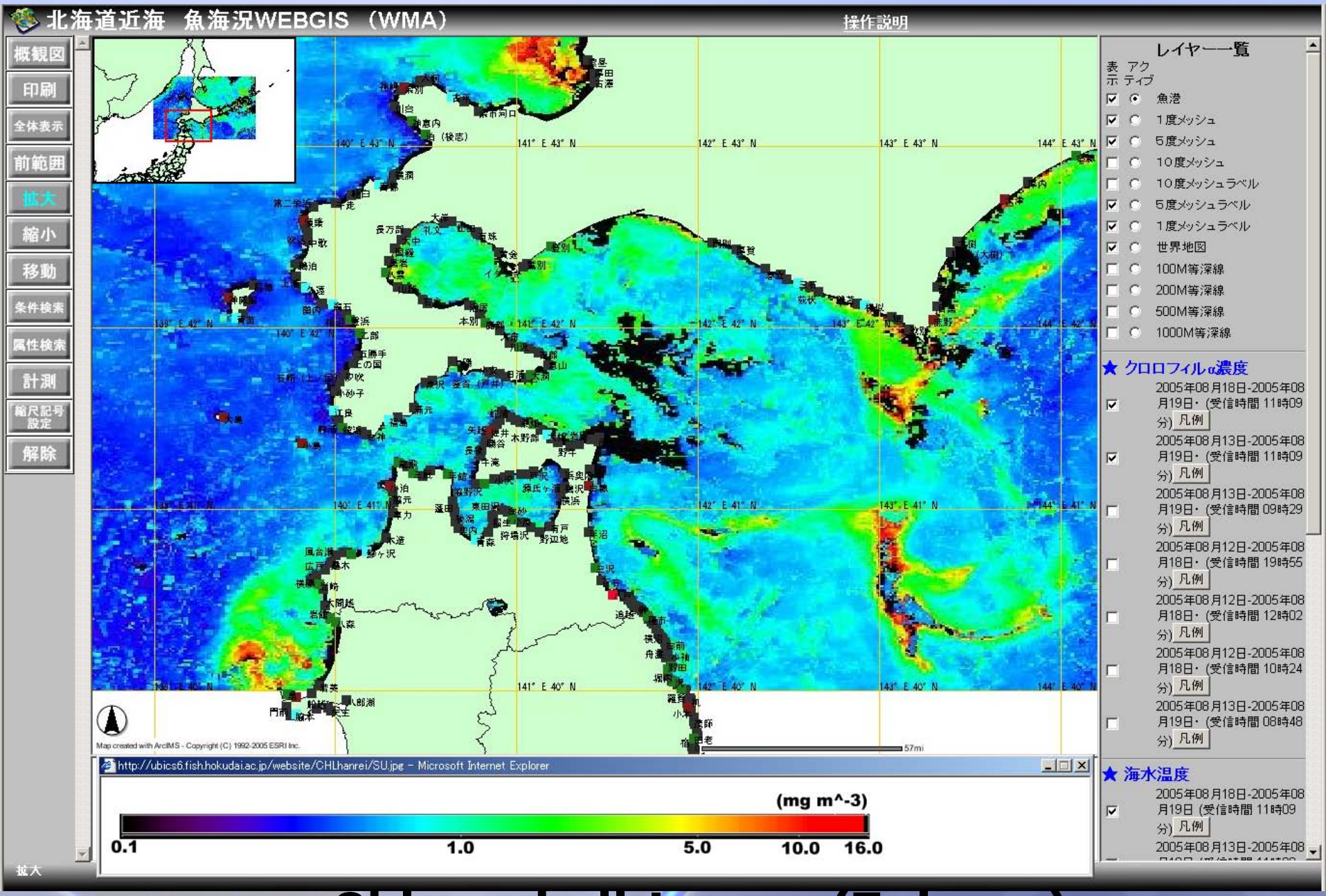
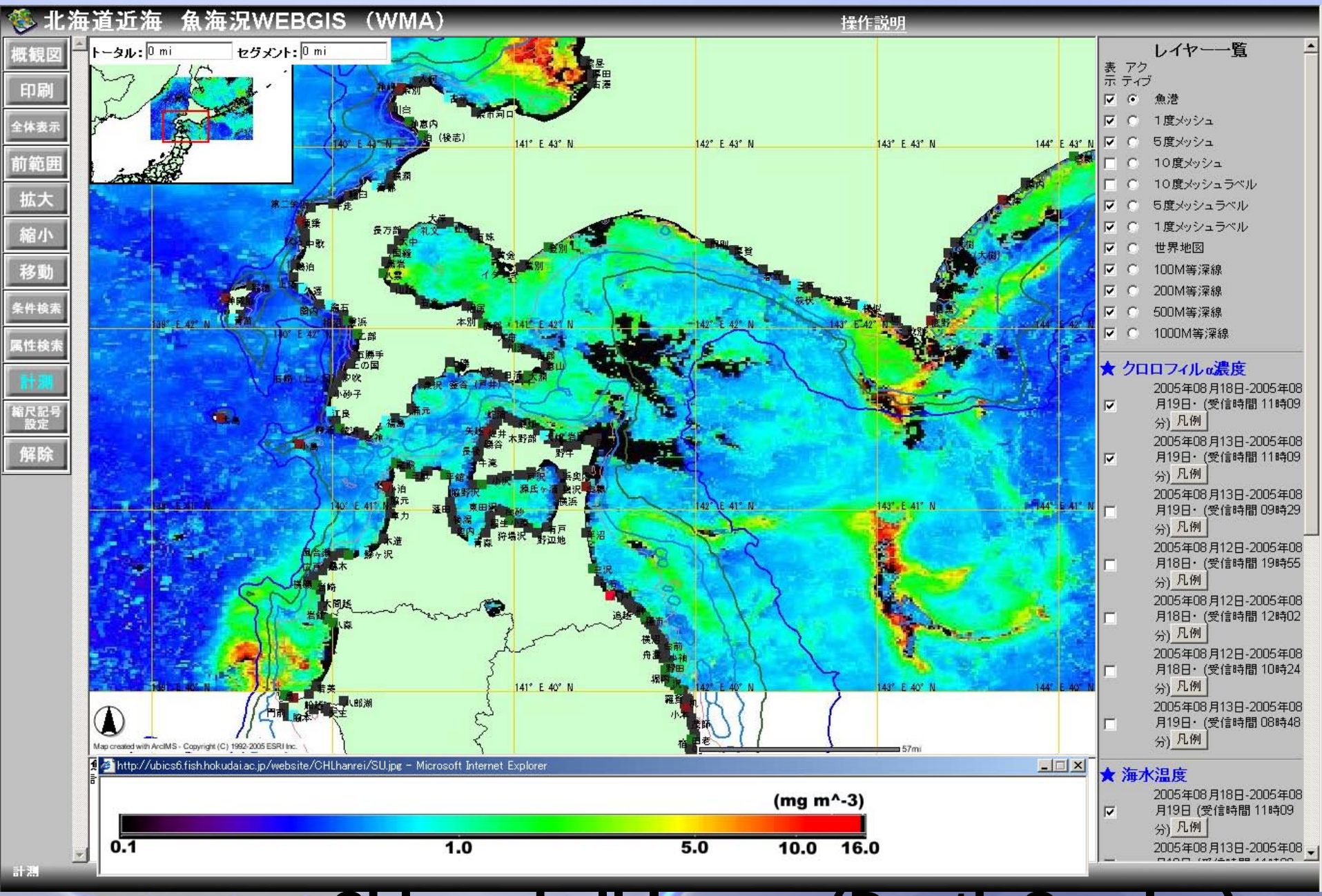


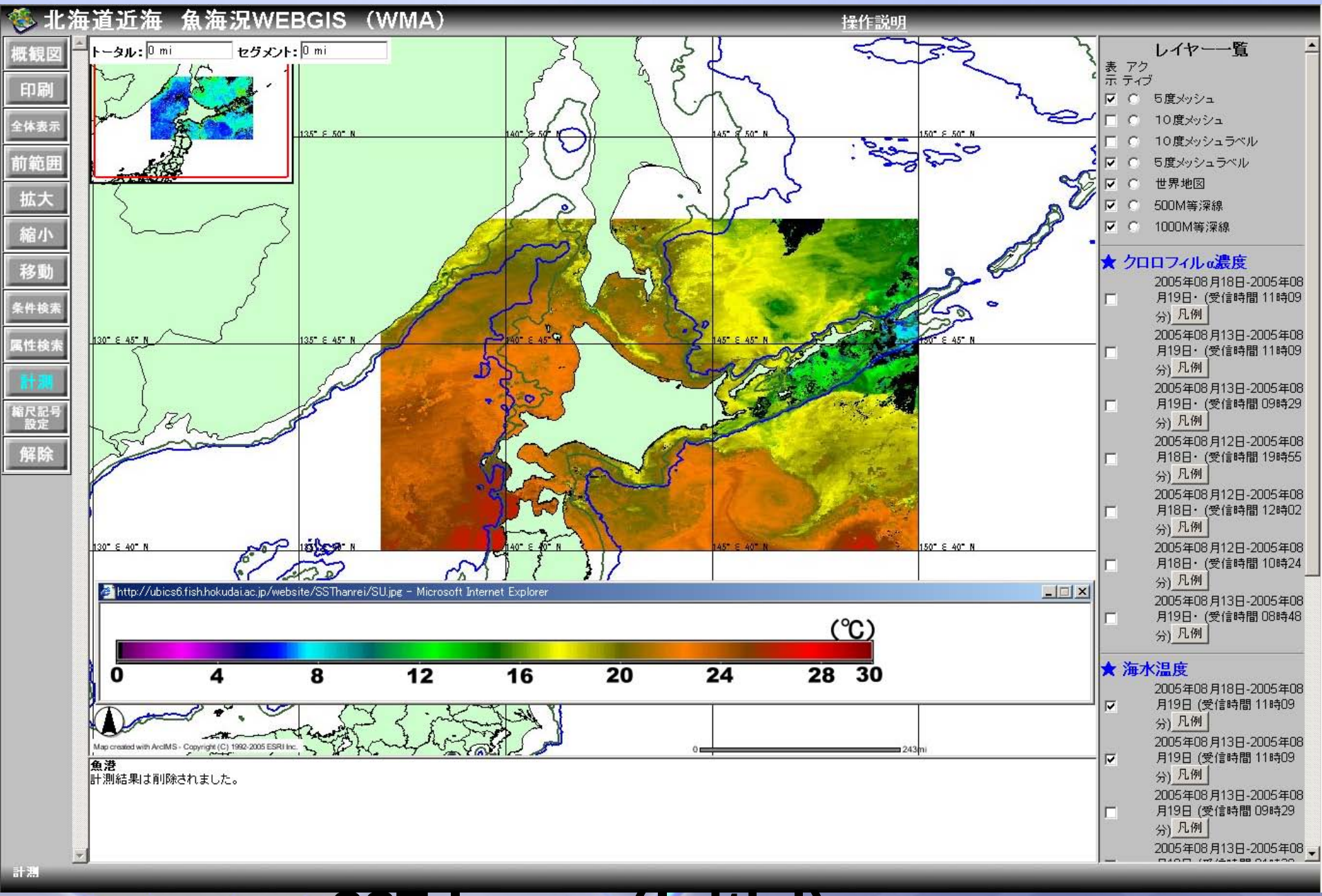
Chlorophyll Image (Initial)



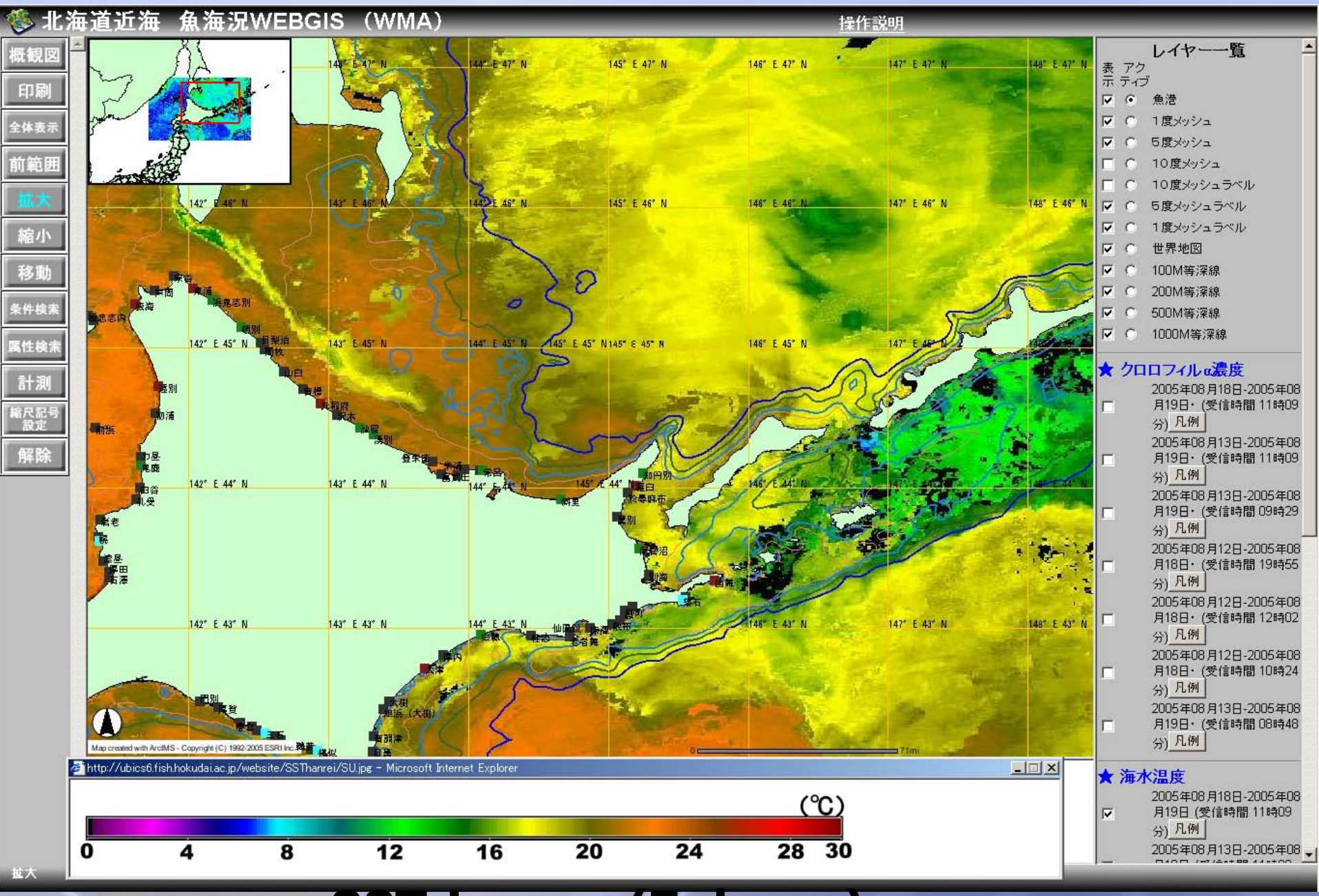
Chlorophyll Image (Enlarge)



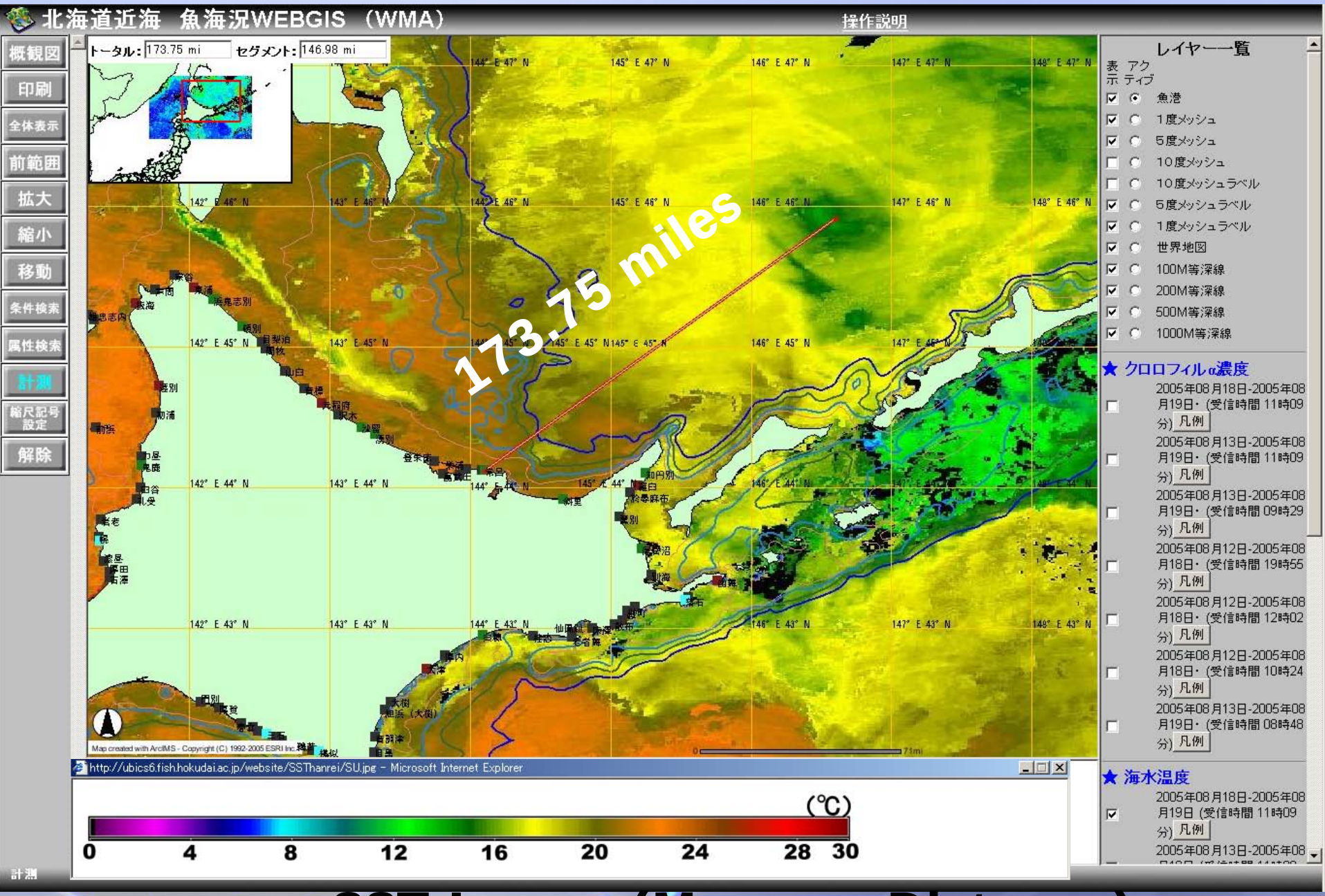
Chlorophyll Image (Depth Overlay)



SST Image (Initial)

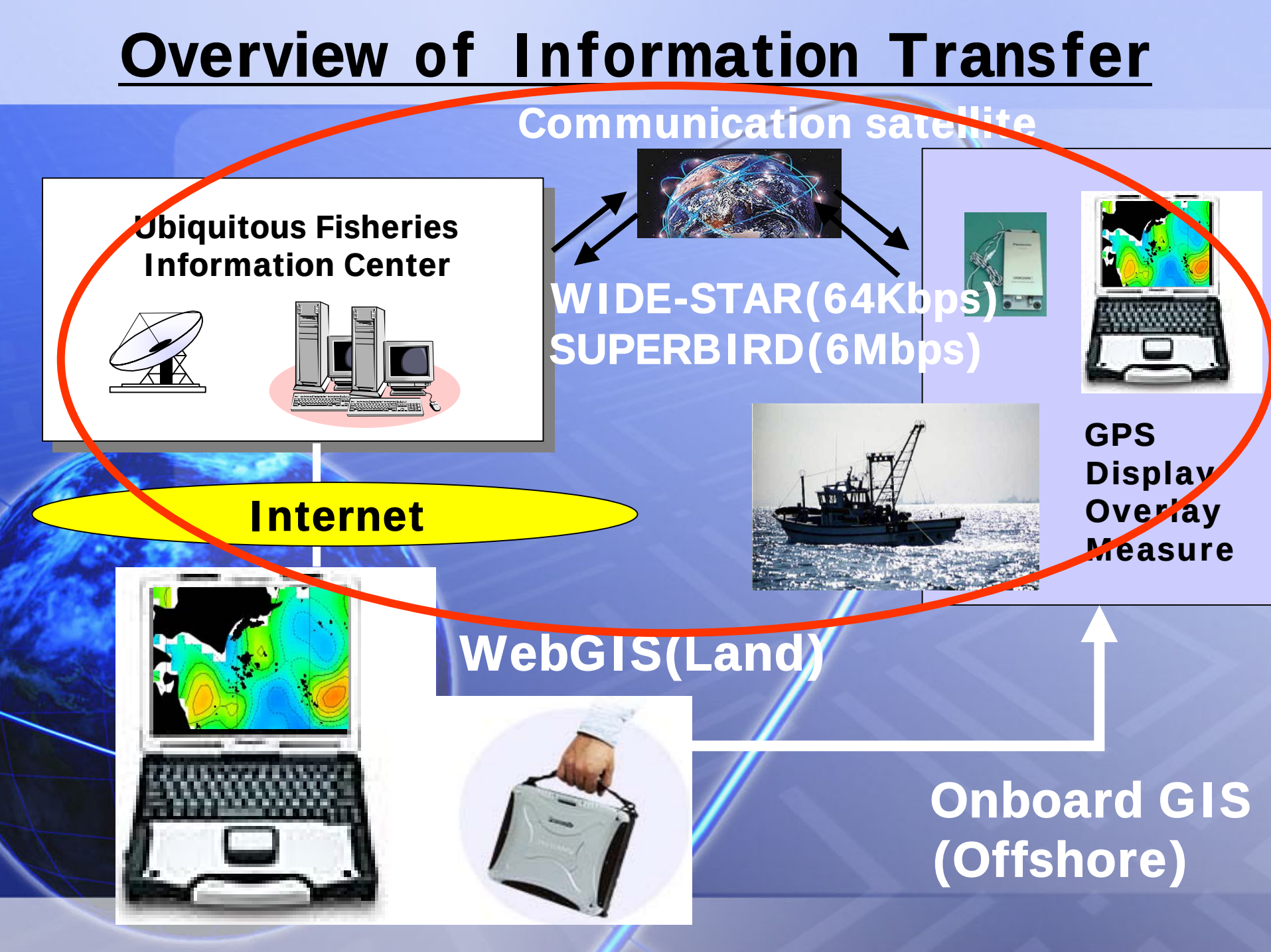


SST Image (Enlarge)



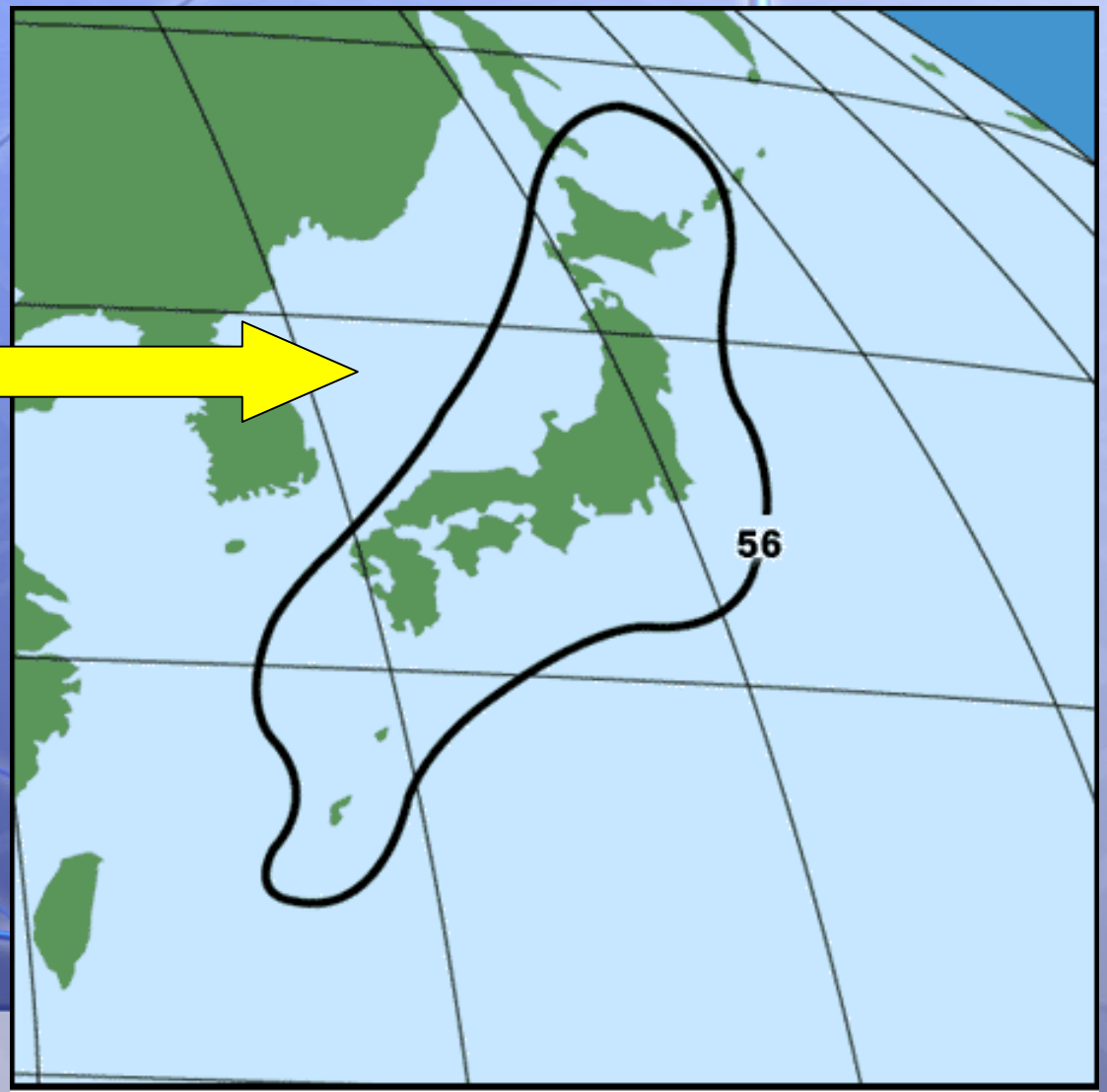
SST Image (Measure Distance)

Overview of Information Transfer



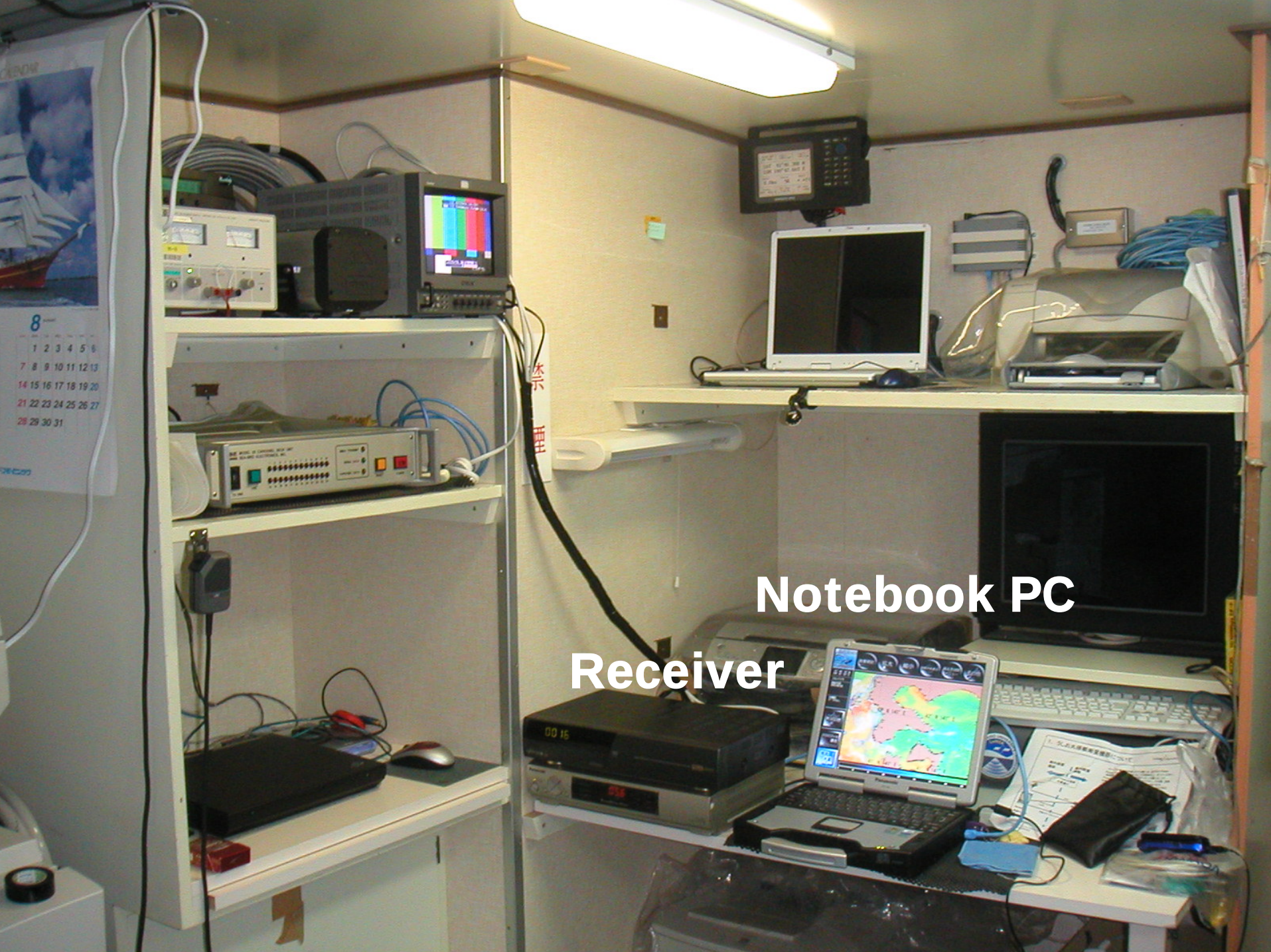
Satellite Communication

- SUPERBIRD-D 110 E Coverage



Antenna for Satellite Communication

-Diameter:60cm
-Ku band


Notebook PC
Receiver

Panasonic - Tough Book

for Fishermen

-Hard Duty
-Water proof
-Touch Panel

GIS:GEOBASE

TOUGHBOOK
漁海況GIS
スルメイカ
漁獲開始
拡大
縮小
自船中央表示
過去予測図
メニュー
その他
41° 46' 14" N
140° 42' 53" E
スルメイカ
海面水温
2005/06/28
予測図
データなし
表示切替
クロロフィル
濃度
海面
水温
42° N 140° E
42° N 141° E
41° N 140° E
41° N 141° E
4
6
8
10
12
14
16
18
20
Panasonic
CF-29

SST Image

Ship Position

Operation near SST front

Harvest： Squid

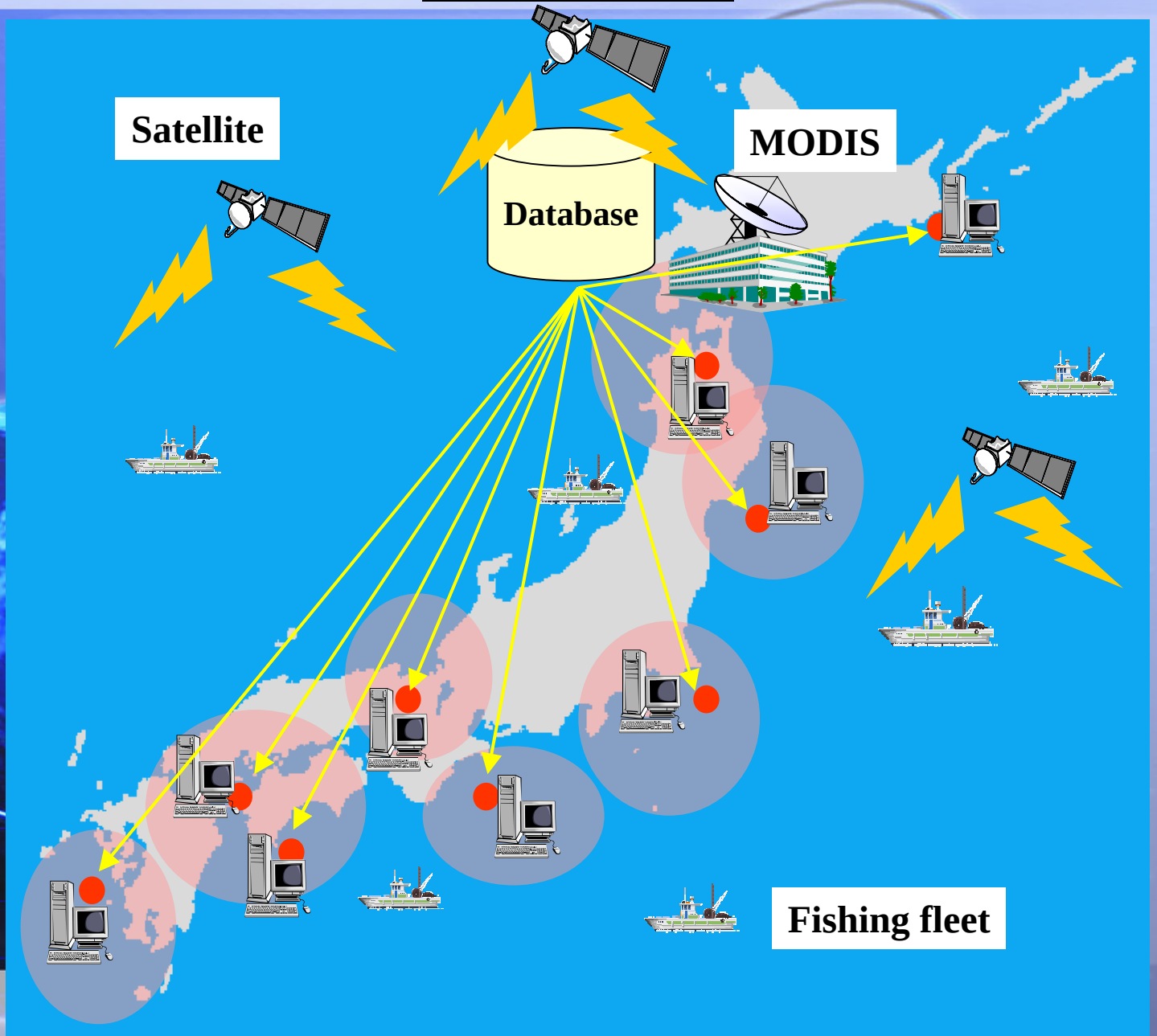
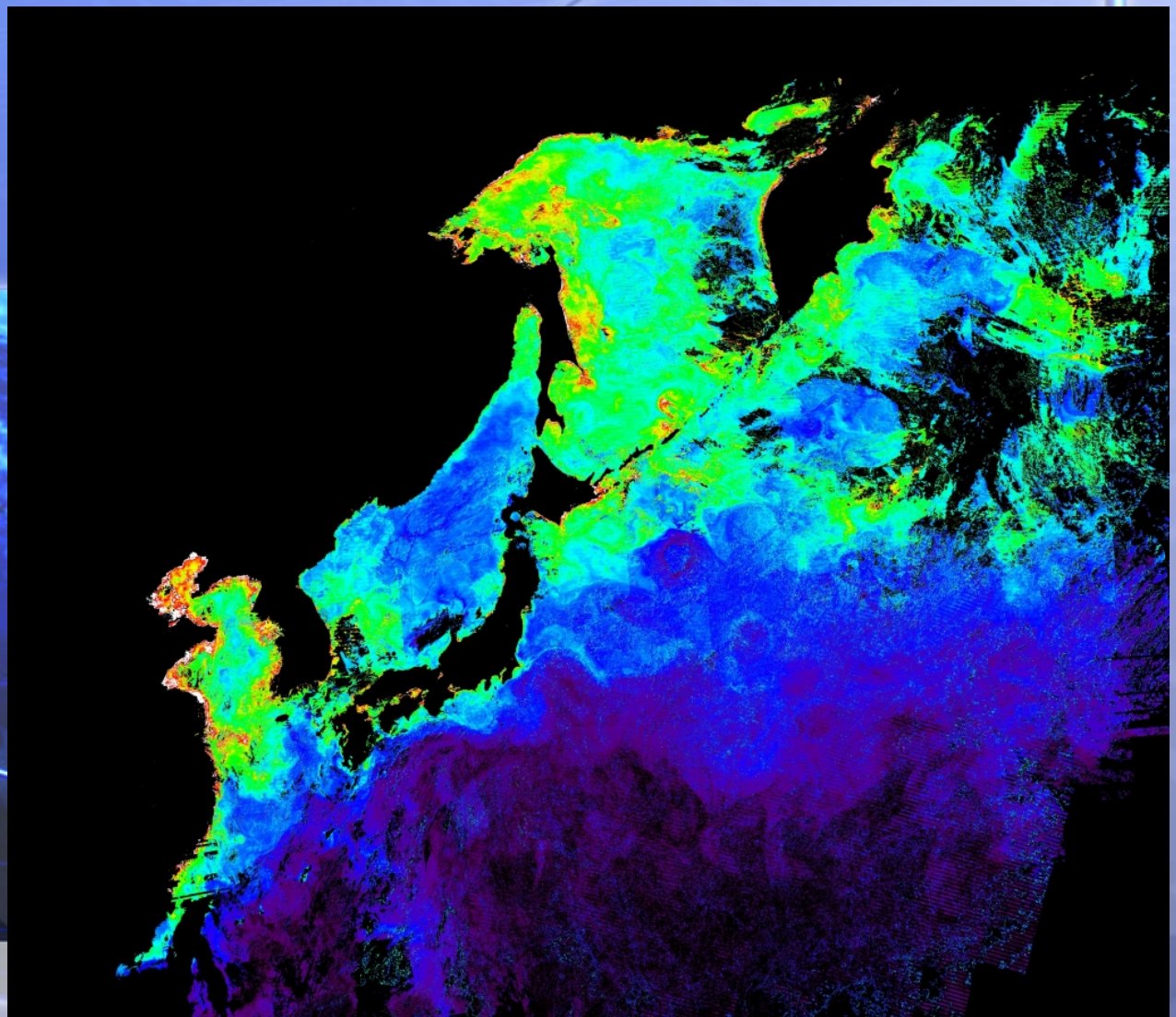
Concluding Remarks

For sustainable use and fisheries management……

- Support ubiquitous RS/GIS assisted fisheries operation
- Contribute to save energy and fuel for optimum fishing activities
- Improve understanding fishing ground formation and fish migration
- Promote to develop "Operational" Fisheries Oceanography

This project is supported by Ministry of Economy, Trade and Industry (METI)

Future



MODIS Chlorophyll Sept. 10, 2005