Coastal Bathymetry and its Application

Tsunami, Renewable Energy, …

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Today's topics

JHOD's bathymetry derived products

- Tsunami hazard information maps
  - ✓ Bathymetric data is used an essential input at the tsunami simulation
- Web-GIS marine information service
  - ✓ People can view bathymetric data and overlay various marine information

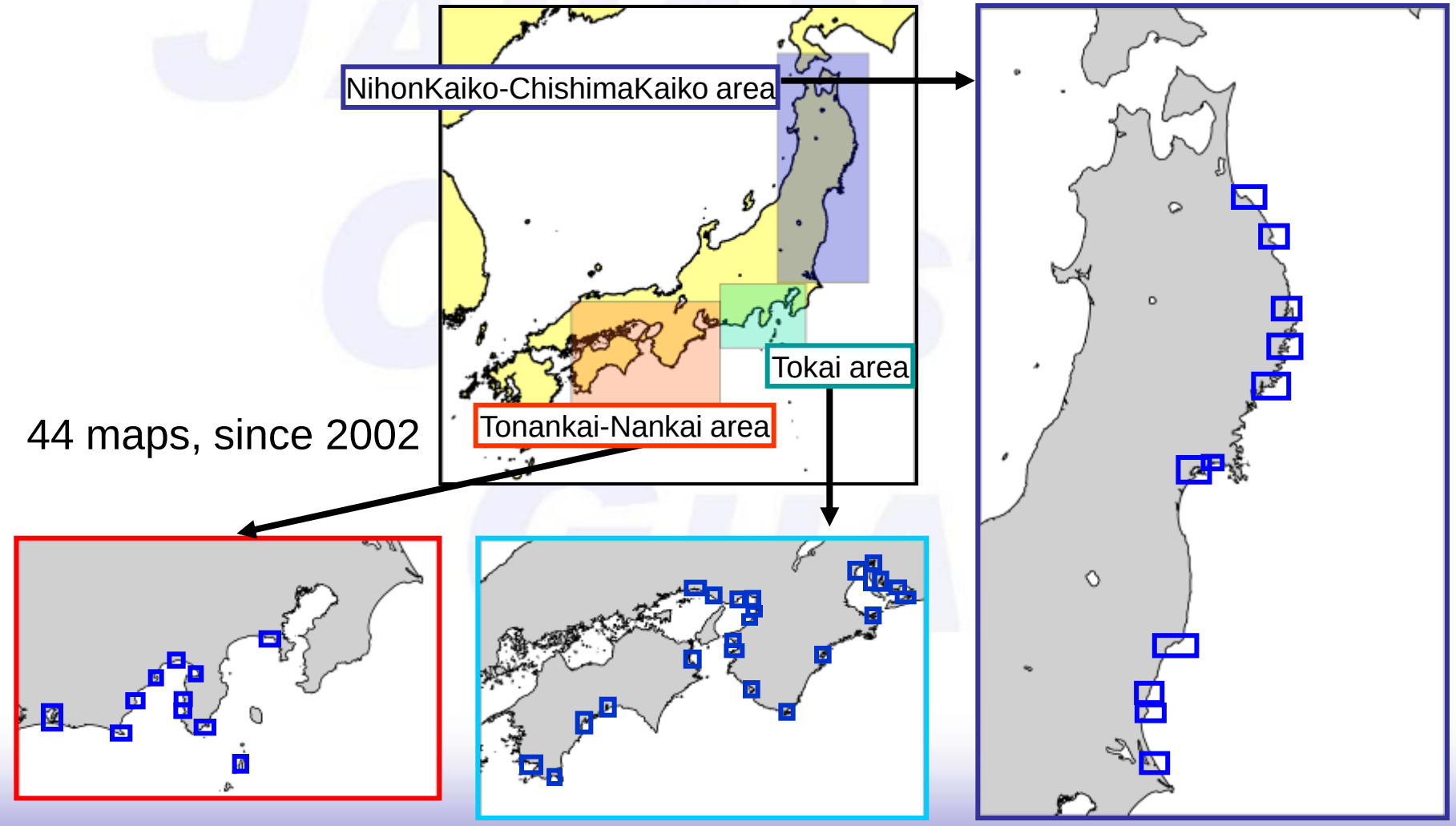
Tsunami hazard information maps

Development of tsunami evacuation plan

Information on tsunami's behaviors are necessary

Tsunami hazard information maps

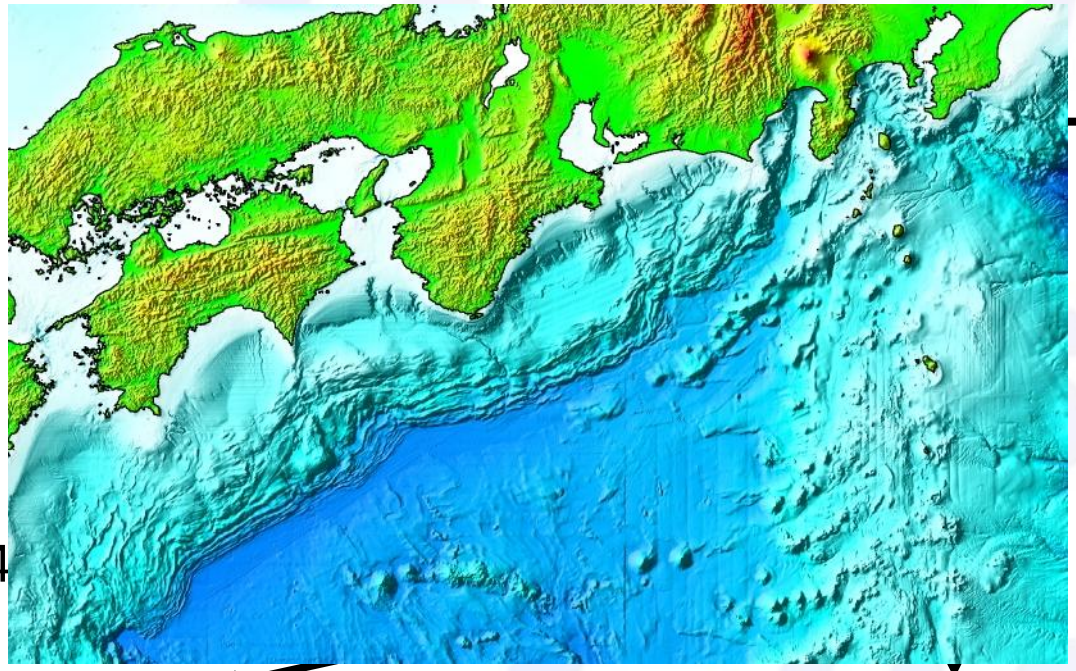
Coverage of the maps

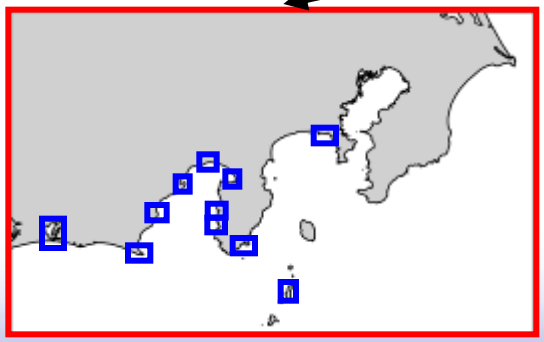


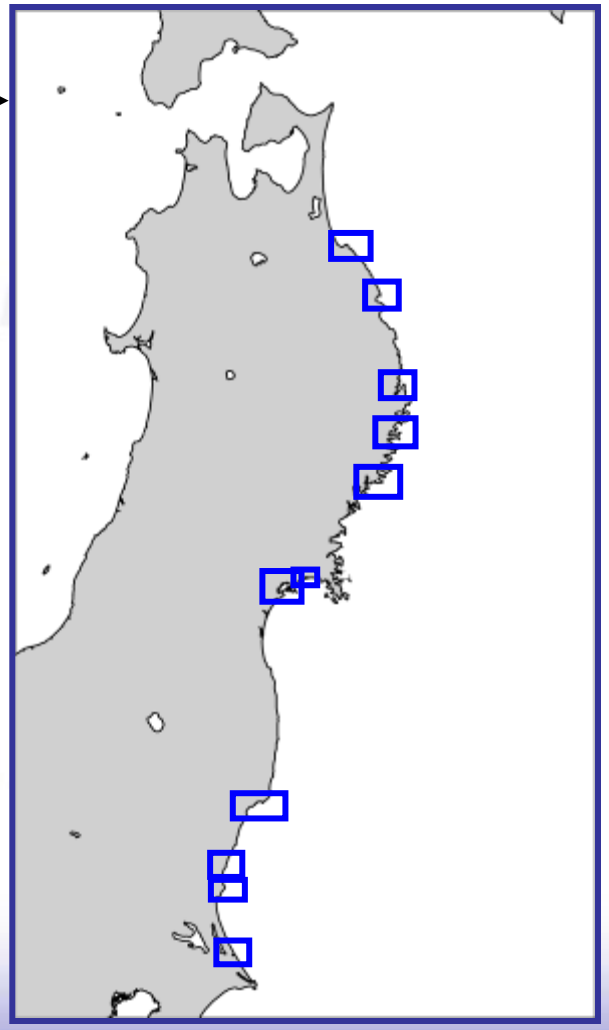
44 maps, since 2002

Tsunami hazard information maps

Coverage of the maps

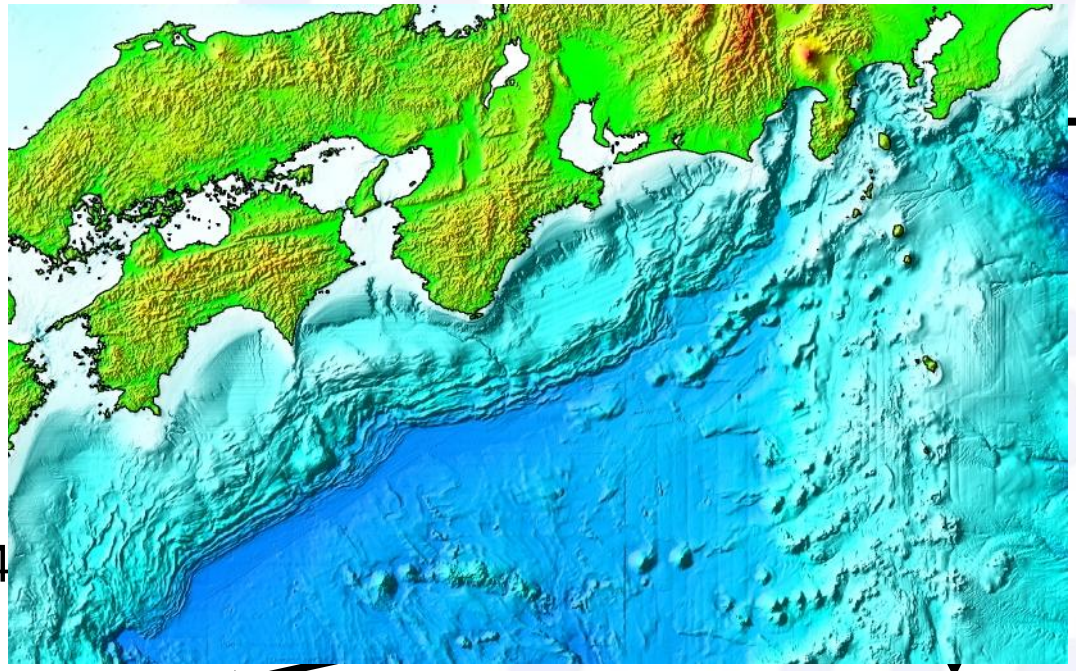


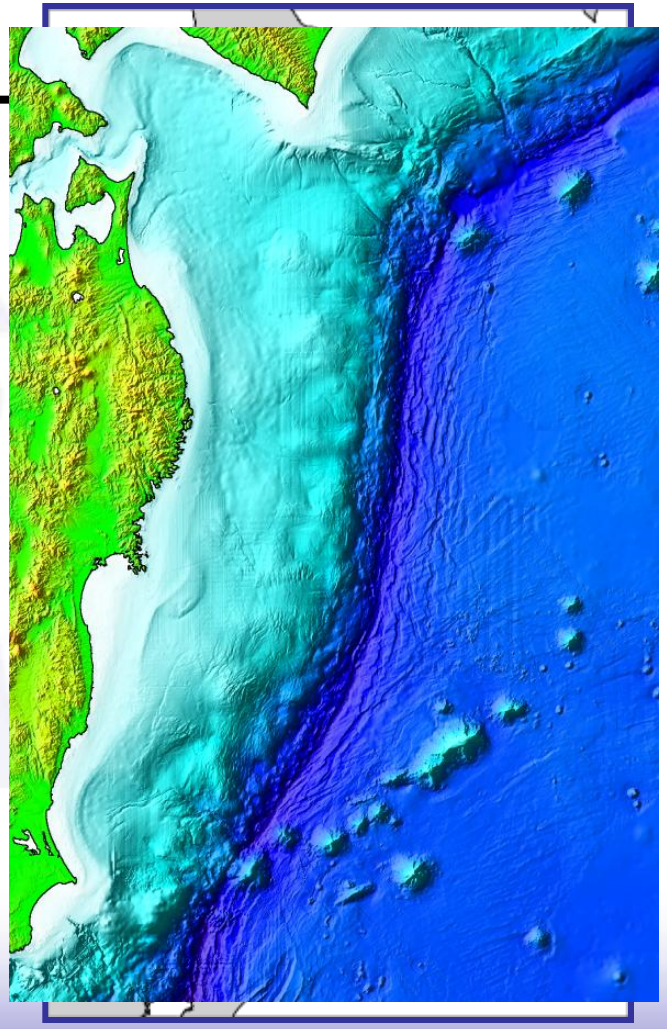


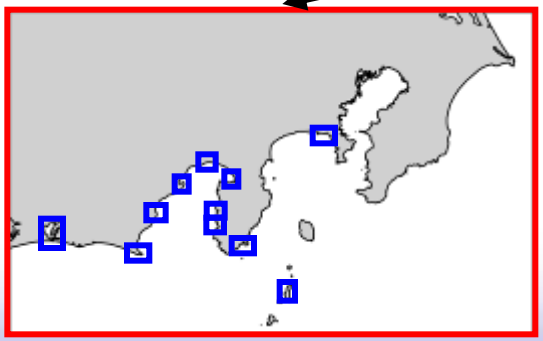


Tsunami hazard information maps

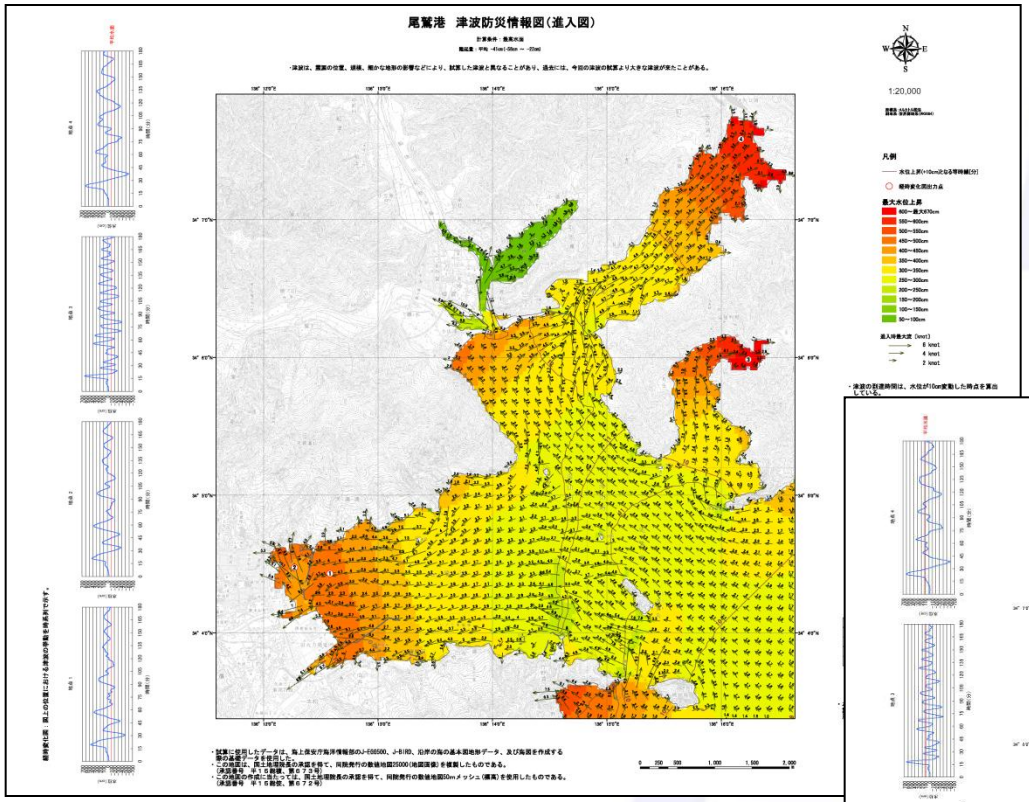
Coverage of the maps



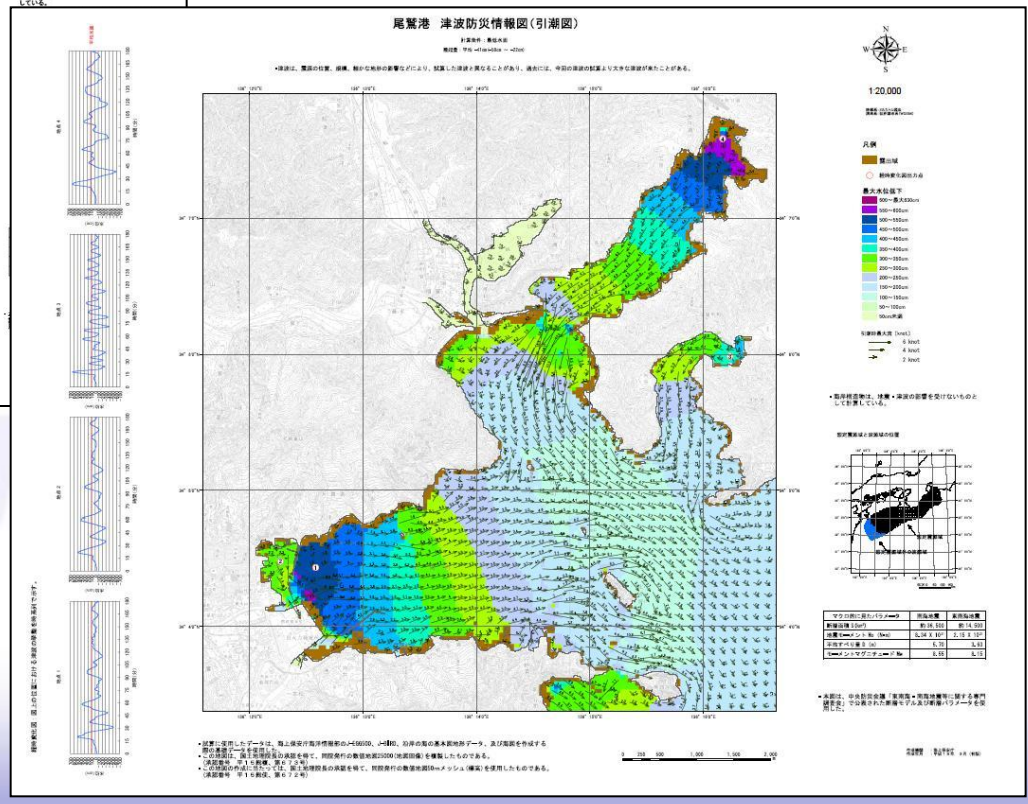




Tsunami hazard information maps

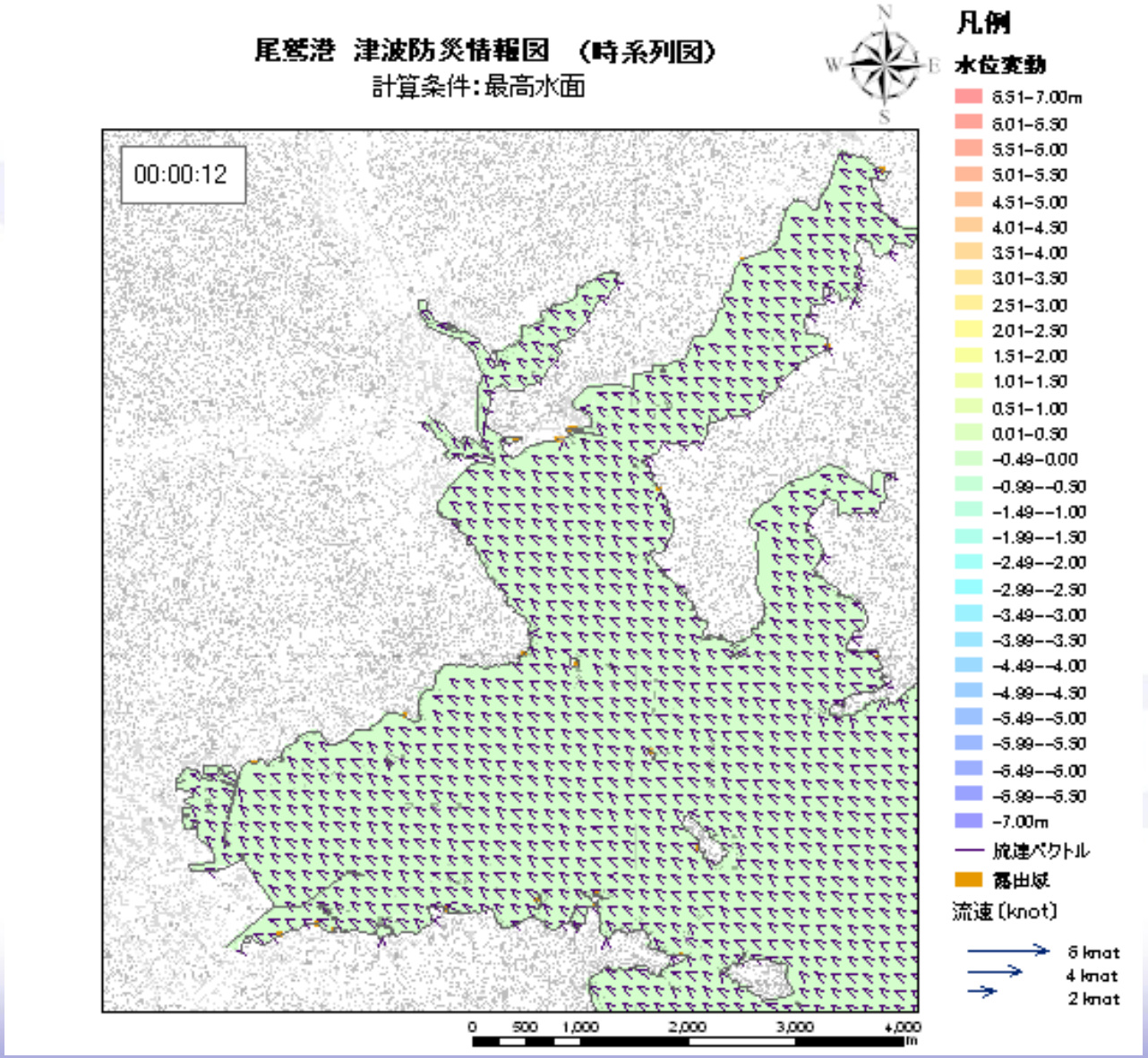


Inflow map



Outflow map

Tsunami hazard information maps



Simulation flow diagram

Bathymetric Data
(on sea)

Altitude Data
(on land)

Compilation
Gridding

Assumed Fault Models
(By Central Disaster Prevention Council, GOJ)

Gridded Data

Tidal Data
(inflow at H.W.L / outflow at L.W.L.)

input

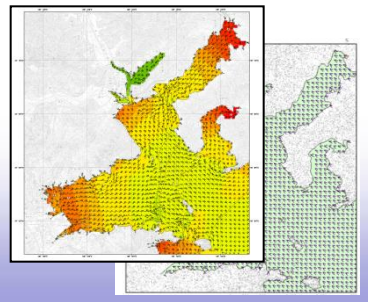
Simulation

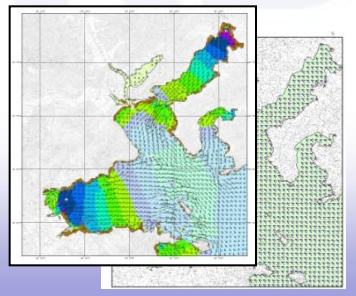
input

output

GIS Database

output



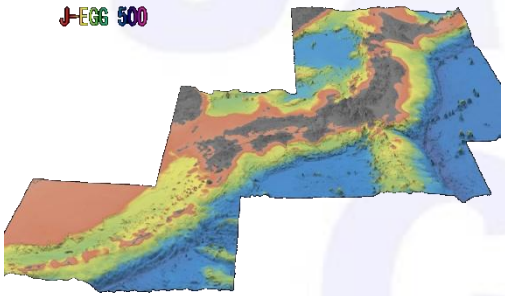


Data gridding

Bathymetric data for the simulation

J-EGG500

JODC-Expert Grid data for Geography -500m



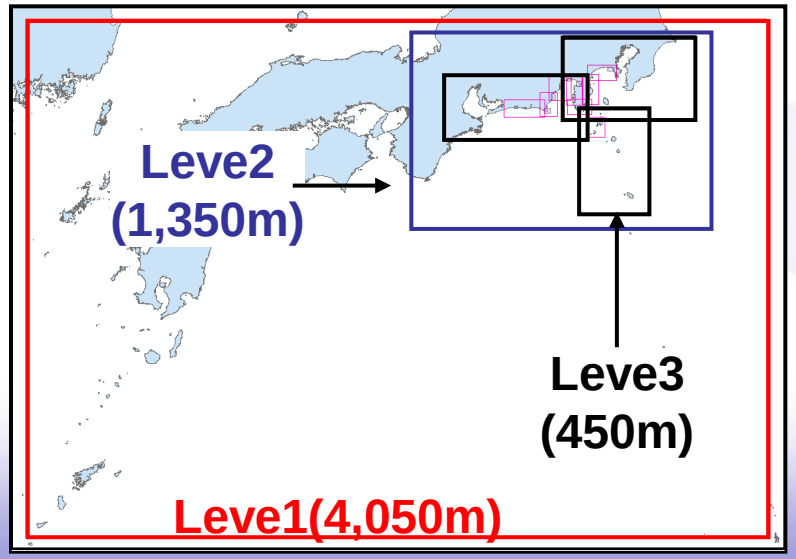
J - BIRD

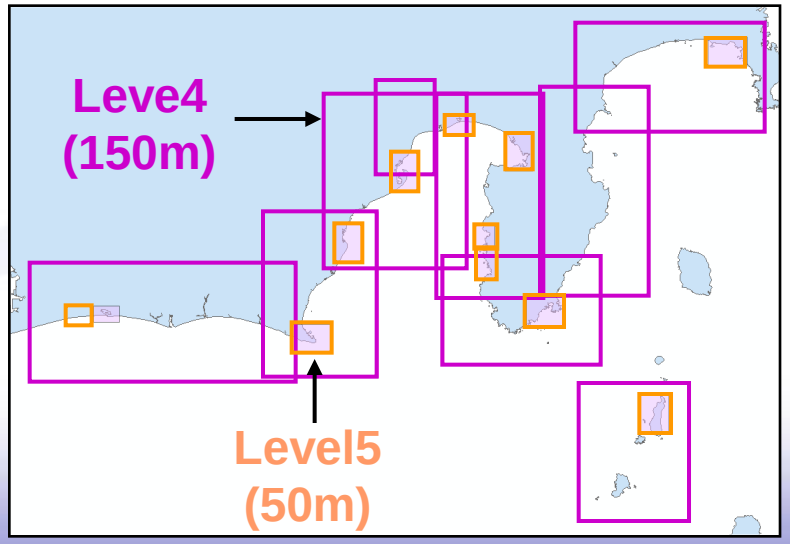
JODC Bathymetry Integrated Random Dataset

520 files, 2,102,202 soundings

Navigational Charts

Compiling/Gridding





Example - Owase Port -

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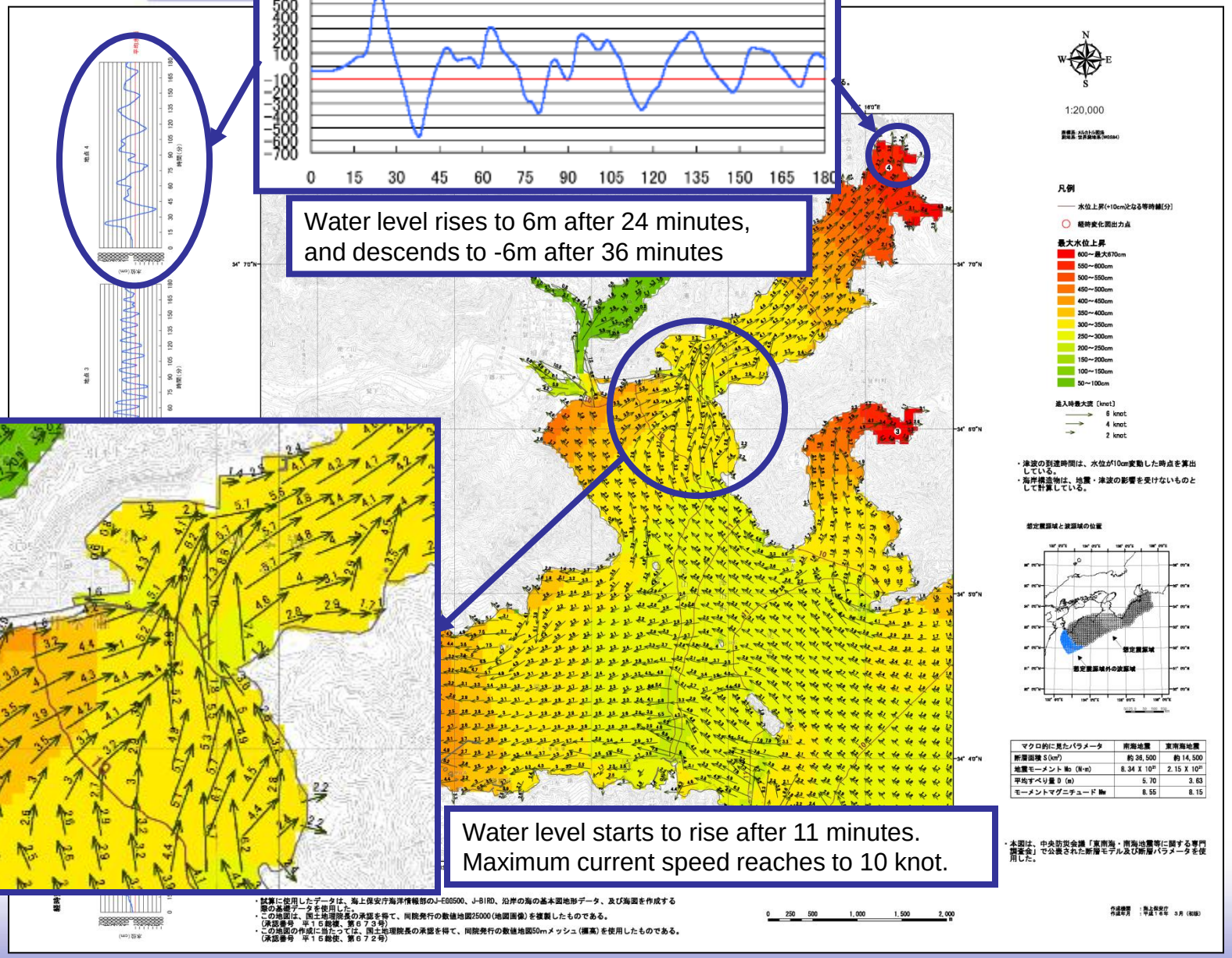
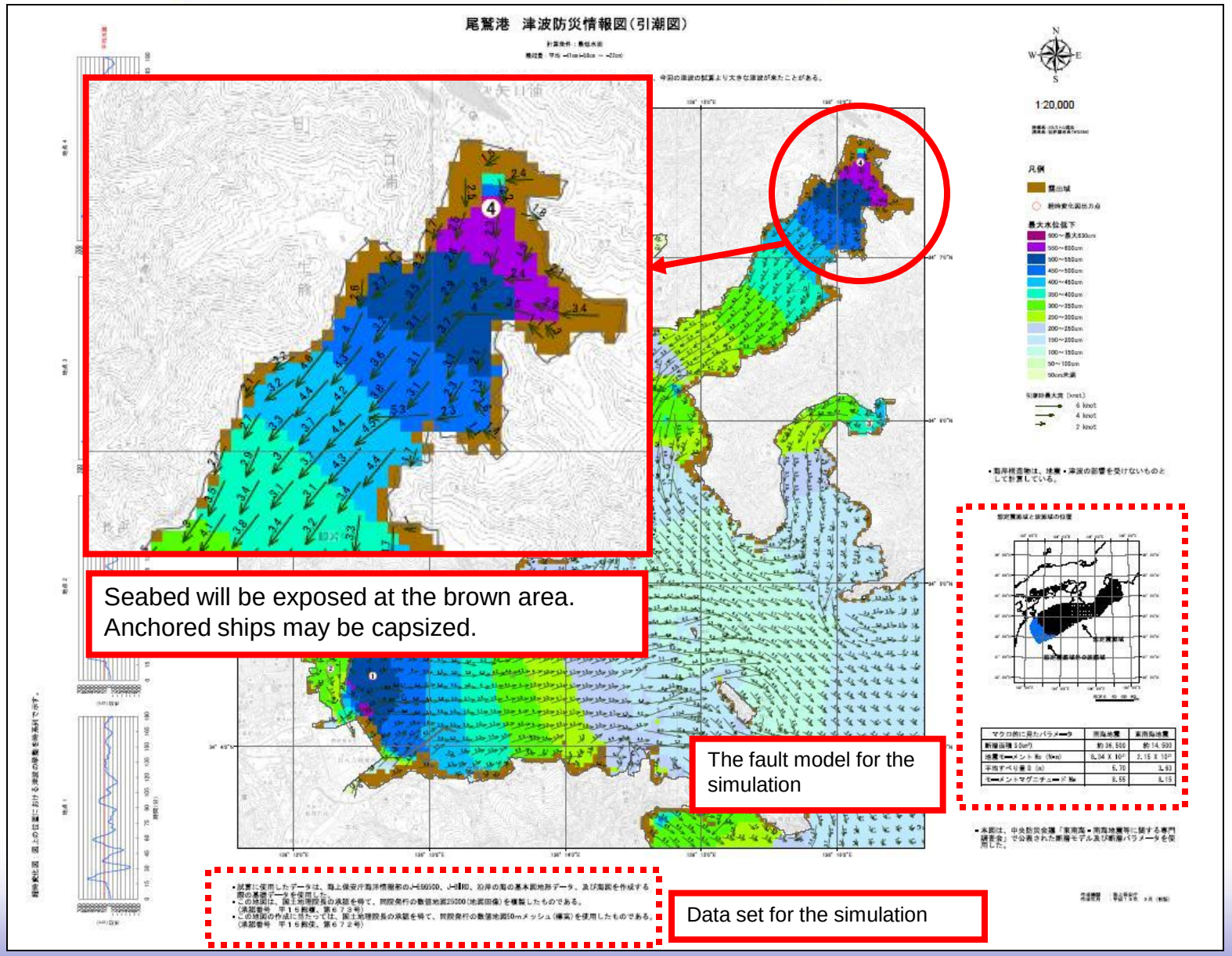


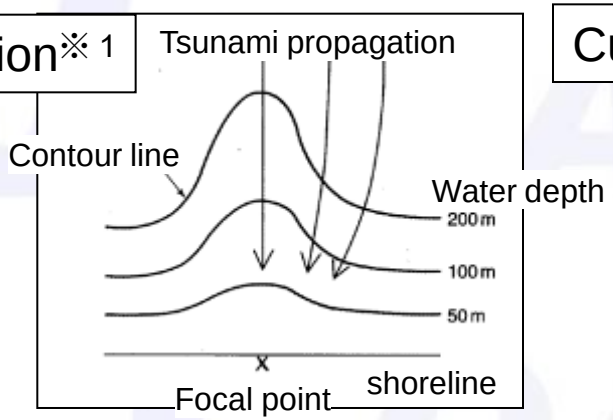
Example - Owase Port -



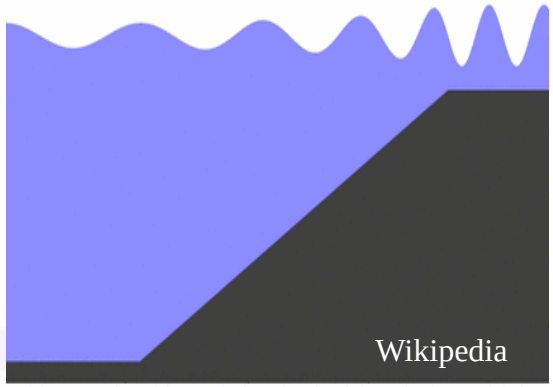
Keys for accurate simulation

Bathymetric data

Propagation※ 1

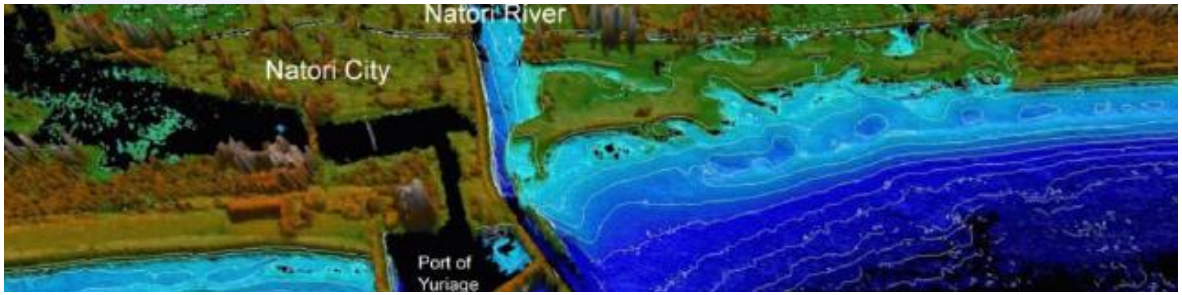


Current Speeds



precise data is necessary

LIDAR bathymetry at assumed great earthquake areas



Fault model

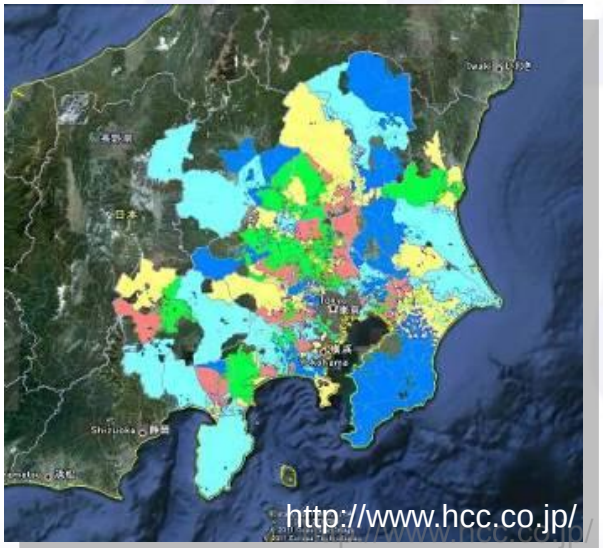
A new fault model is under construction by the Central Disaster Prevention Council, GOJ

※ 1 http://sakura1.higo.ed.jp/ws/kchigaku/seito/h22/kumataka/h22kumataka.htm

Web-GIS marine information service

Accident at the Fukushima nuclear power plant

Jp.wsj.com



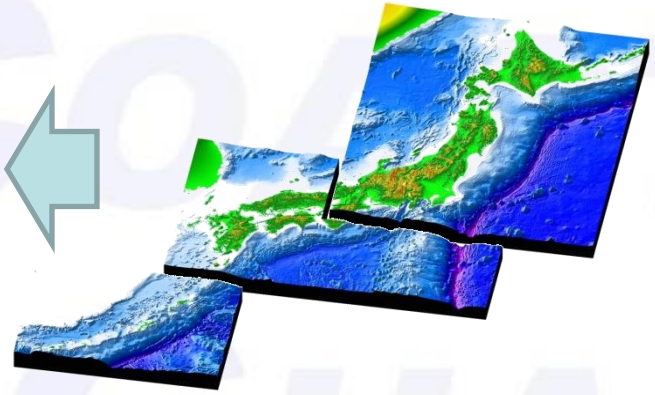
The national policy for energy sources was changed

Web-GIS marine information service

Ocean as a promising source for renewable energy

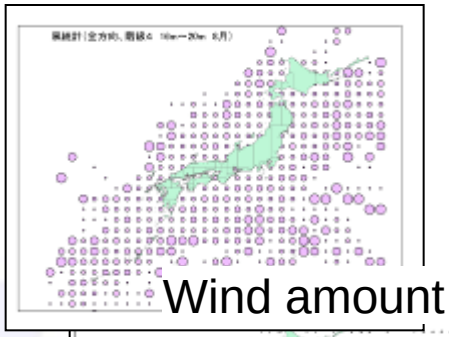
Constructing the offshore wind farm

Offshore wind power has huge potential!

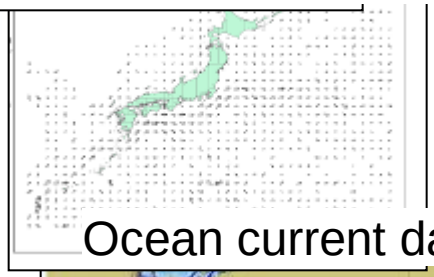


Bathymetric data

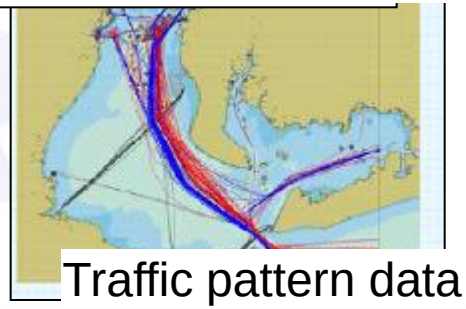
+



Wind amount data



Ocean current data



Traffic pattern data

…

Providing easy access to various marine information

Web-GIS marine information service

JHOD as a national oceanographic data center (JODC)

Social Information/Statistical data

Concerned Agencies
Local governments

Information on
nautical charts

Scientific Data

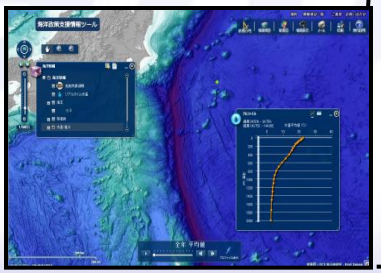
IODE network

IODE International Oceanographic Data and Information Exchange

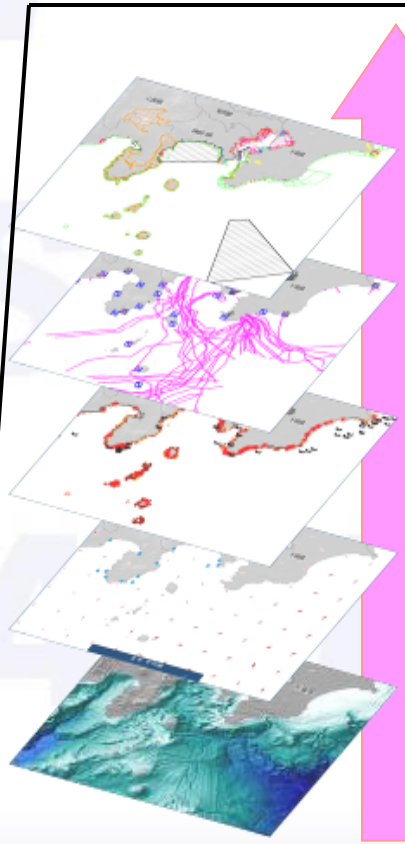
Concerned Institutes

Spatial Information Database

Web GIS server



52 kinds of data are available



Socio-economic info.
fishery rights,
port areas, …

Infrastructure info.
undersea cables,
navigational aids, …

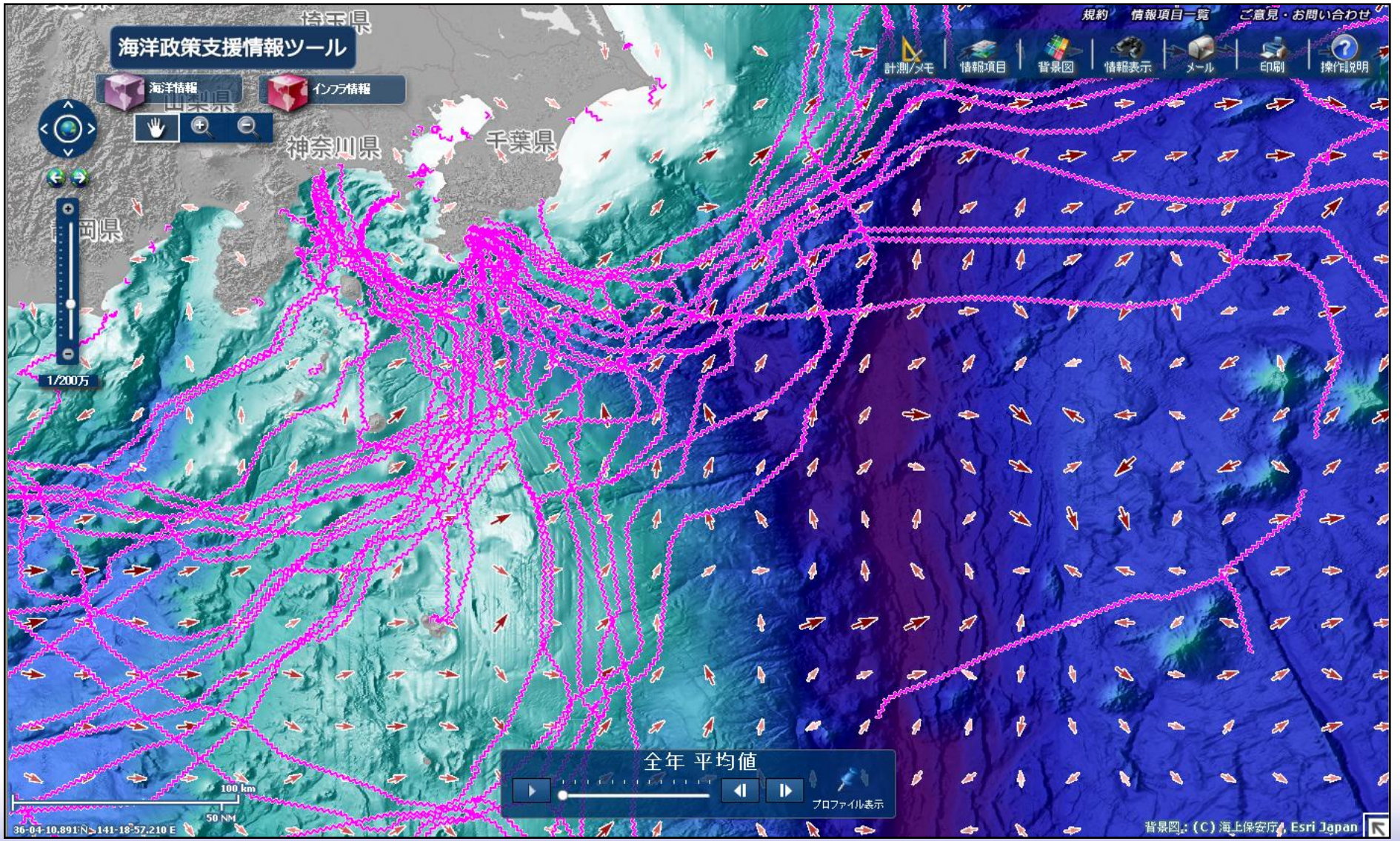
Environmental info.
wetlands, tidal flats,
sunken ship, …

Marine data
depths, currents,
salinity, …

Background data
Bathymetry,
Traffic patterns, …

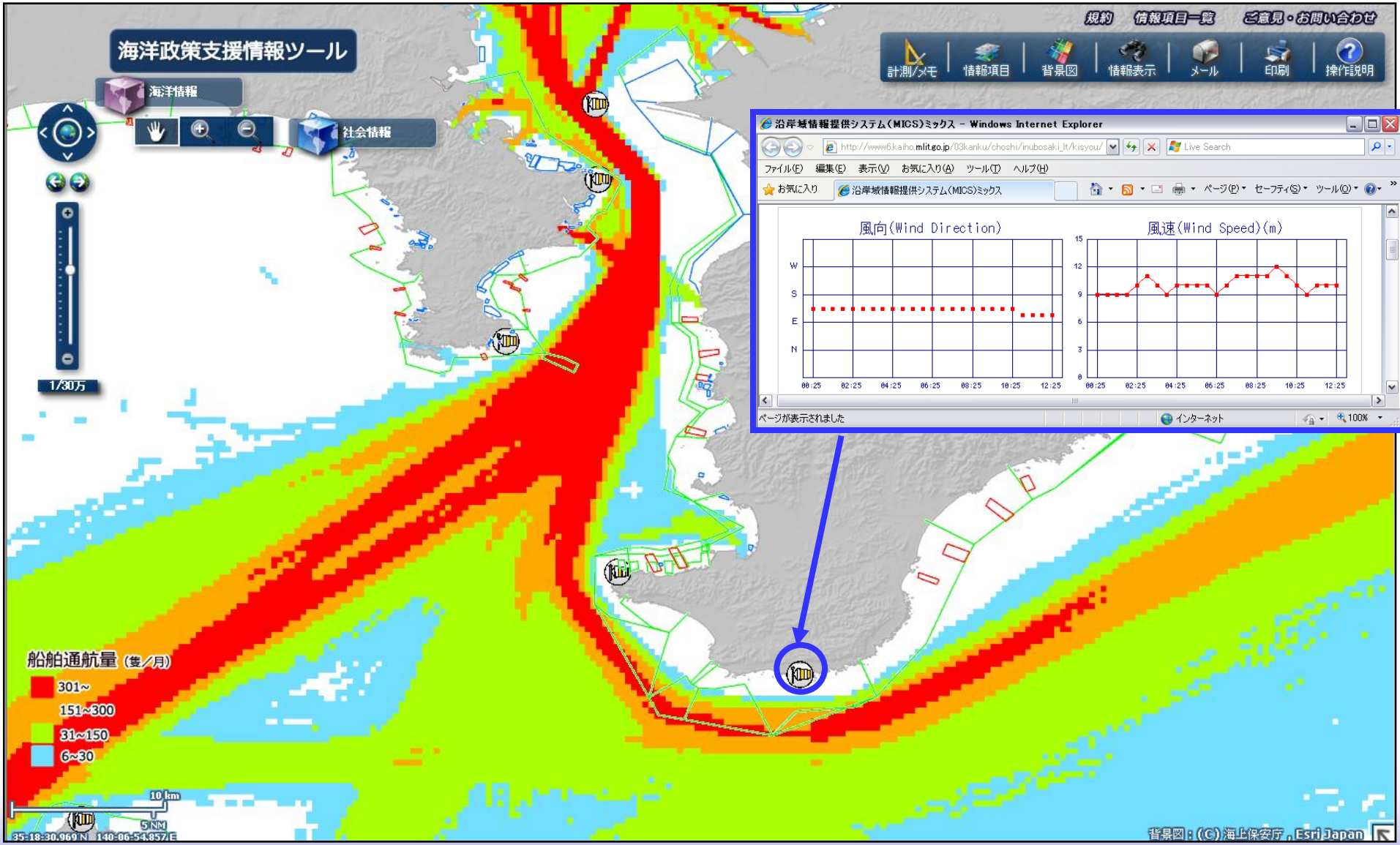
Web-GIS service

Web-GIS marine information service



Web-GIS marine information service

Web-GIS marine information service



Summary

- JHOD is creating tsunami hazard maps for mariners.
- Precise bathymetric data is essential for the accurate simulation.
- JHOD will conduct high-resolution LIDAR bathymetric surveys.
- JHOD has just started a new data providing service which provides various marine information in a visualized way.
- People can use this service for the purpose such as to locate suitable places for offshore wind farm,
- So we believe that this new service will accelerate development of renewable energy sources at the ocean around Japan.

Thank you for your attention!