ME14A
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Operational Prediction of the Habitat Suitability Index (HSI) Distribution for Neon Flying Squid in Central North Pacific by Using FORA Dataset and New Data Assimilation System SKUIDS

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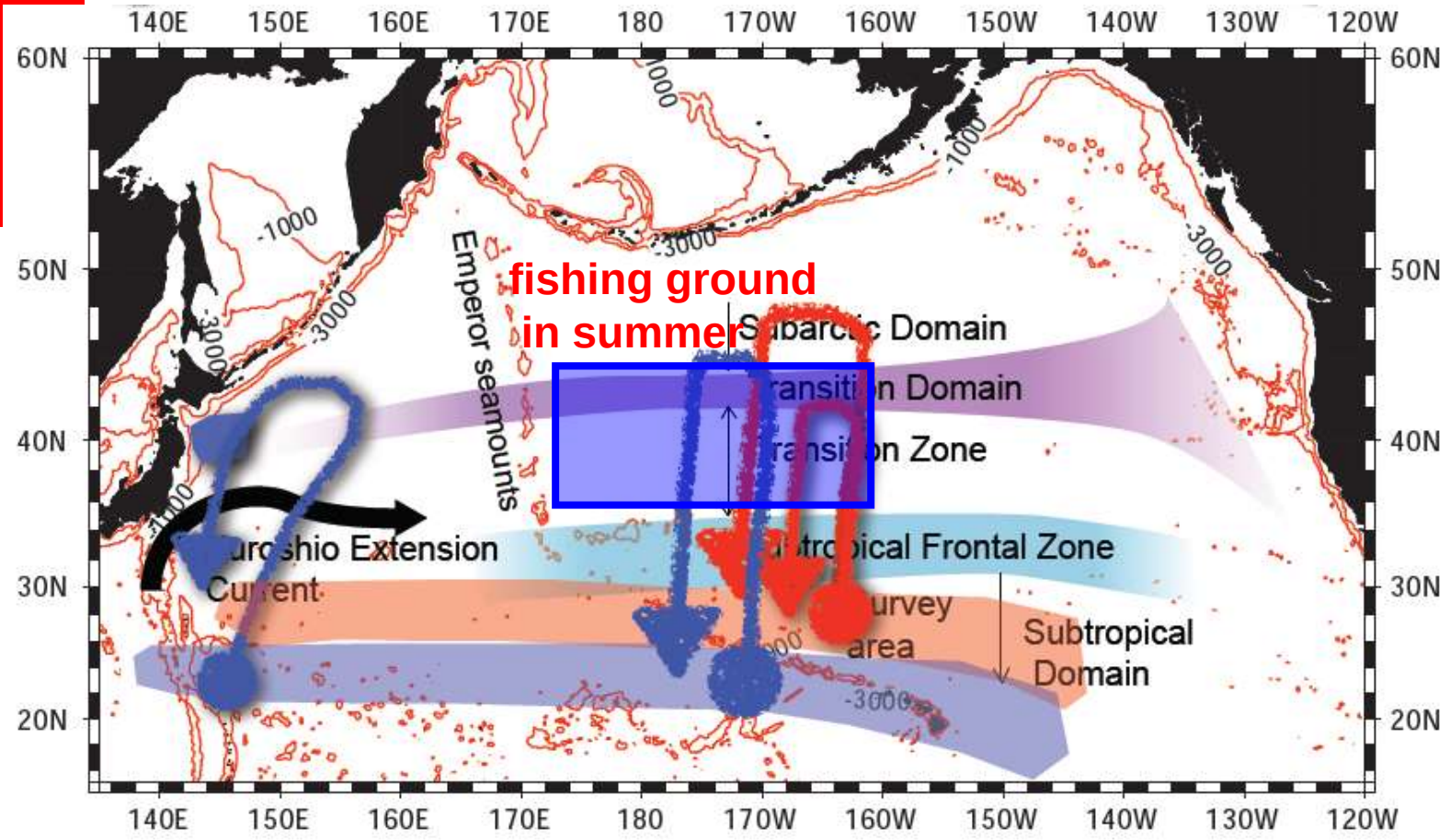
summary

- We have developed an operational prediction system of potential fishing zone of neon flying squid in the central North Pacific.
  - ocean reanalysis **FORA**
  - data assimilation system **SKUIDS**
  - **Habitat Suitability Index (HSI) model**
- We provided the daily squid HSI forecast to the Japanese commercial vessels in operation 2015 summer.
- The information of HSI forecast has a potential to contribute to saving the fuel costs of vessels and lead to the stabilization of fishery management.

neon flying squid

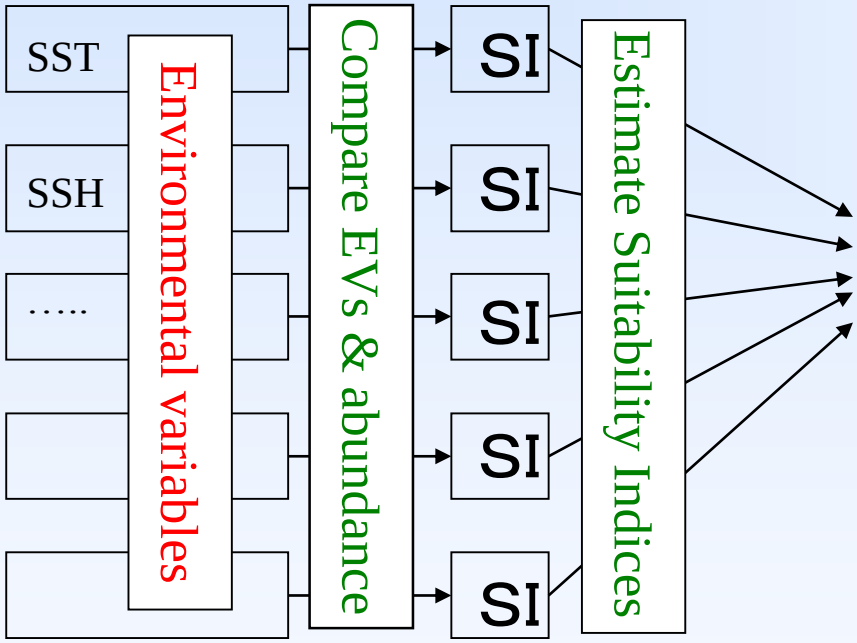
(*Ommastrephes bartramii*)

- widely distributed in the North Pacific
- 1-year lifespan and seasonal migration
- important for Japanese fisheries



Habitat Suitability Index(HSI)model

- is widely used as a tool for ecological impact assessment.
- describes the relations between fish abundance and environmental variables, estimates the level of habitat suitability as an HSI score ranging from **0 to 1**.

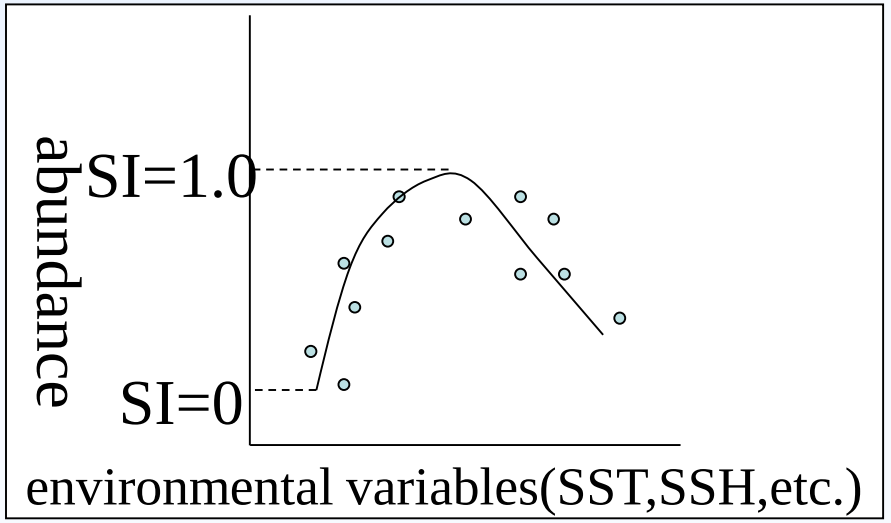


SI : Suitability index

HSI

HSI=f(Si1, Si2, Si3, ・・・)

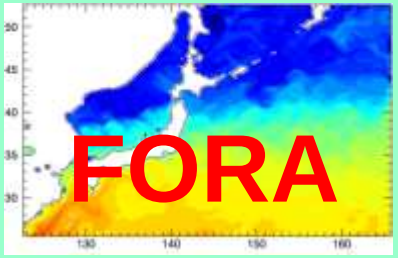
Habitat Suitability Index



For forecasting squid HSI ...

HSI model development

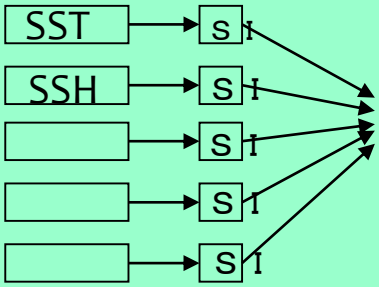
×

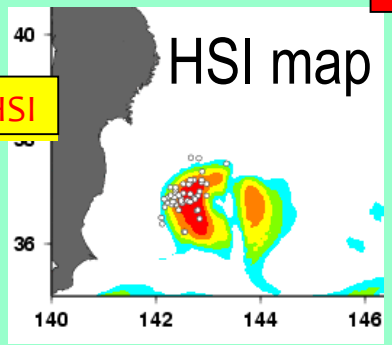


squid catch data

ocean environmental data in the past

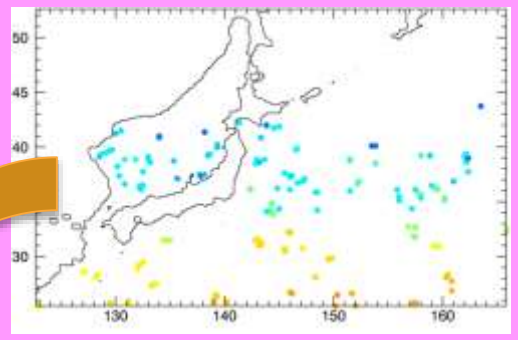
integration analysis





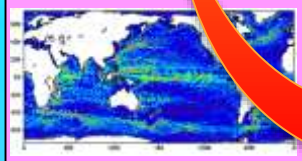
ocean state prediction

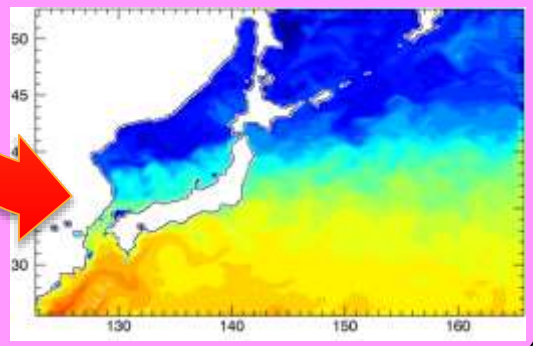
data assimilation & forecast



SKUIDS

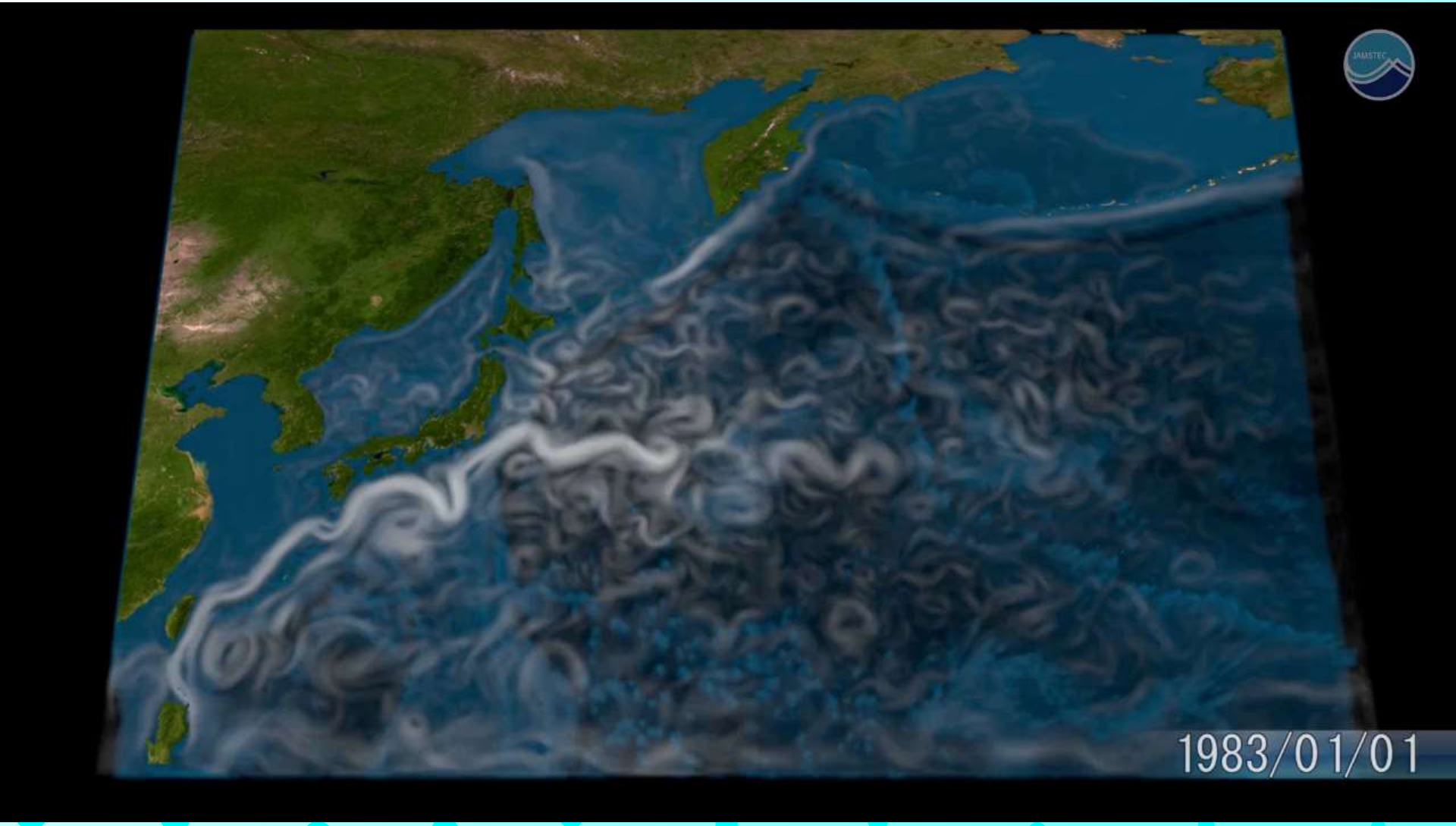
real-time prediction





Long-term ocean reanalysis dataset

FORA (4-dimensional variational Ocean ReAnalysis)

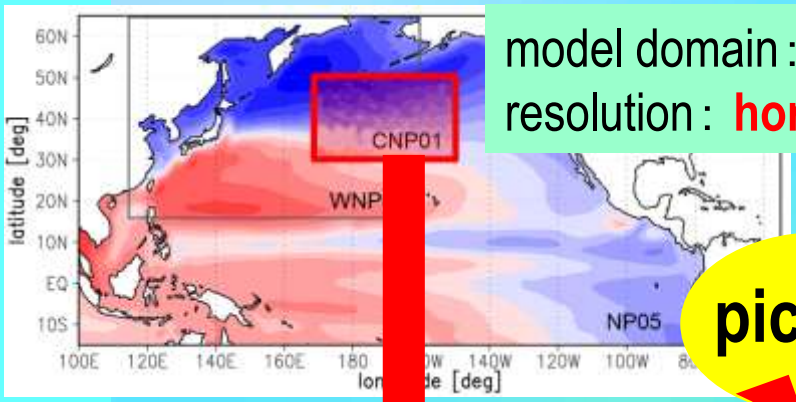


Ocean state prediction

Scalable Kit of Under-sea Information Delivery System

SKUIDS

JAMSTEC has developed a new data assimilation system for the real-time ocean forecast **of the fishing ground of neon flying squid**.



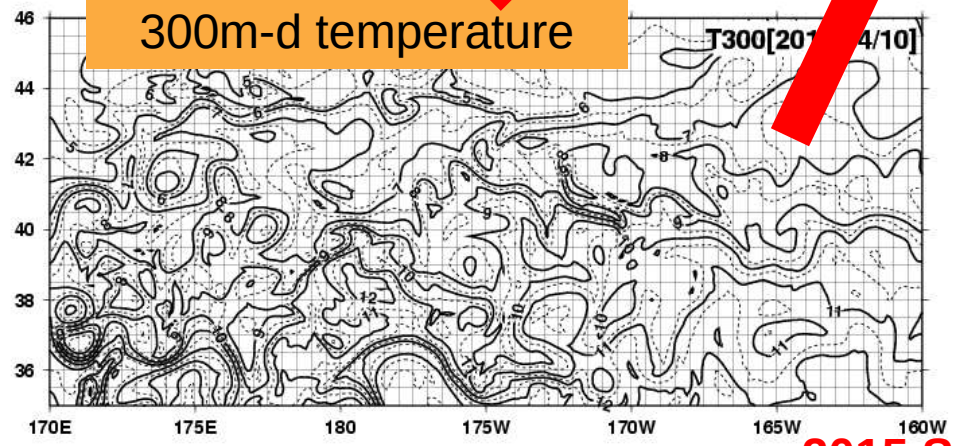
model domain : 170-210E, 30-50N
resolution : **horizontal 0.1*0.1°** ,vertical 54 levels

pick up

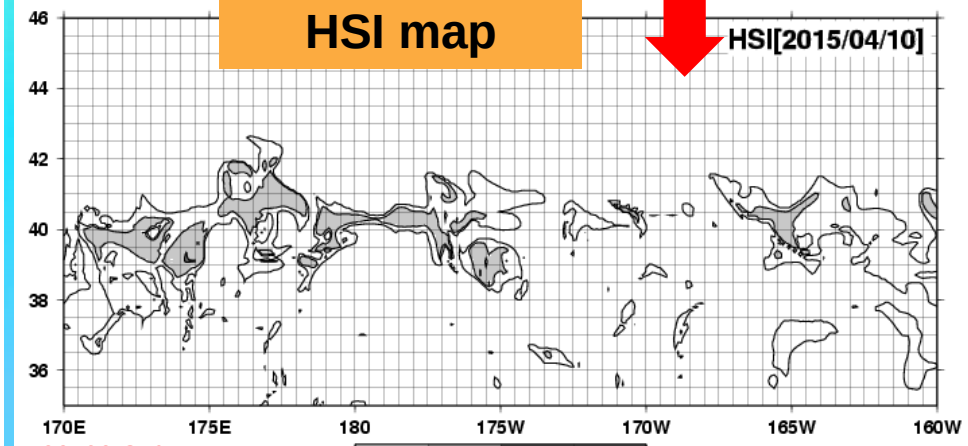
7 variables:
SST,SSS,SSH,
∇SSH,MLD,
T_{246m},V_{246m}

HSI model

300m-d temperature



HSI map



2015 Summer

Web delivery by satellite telecommunication

satellite

Japanese commercial fishing vessels

cloud server

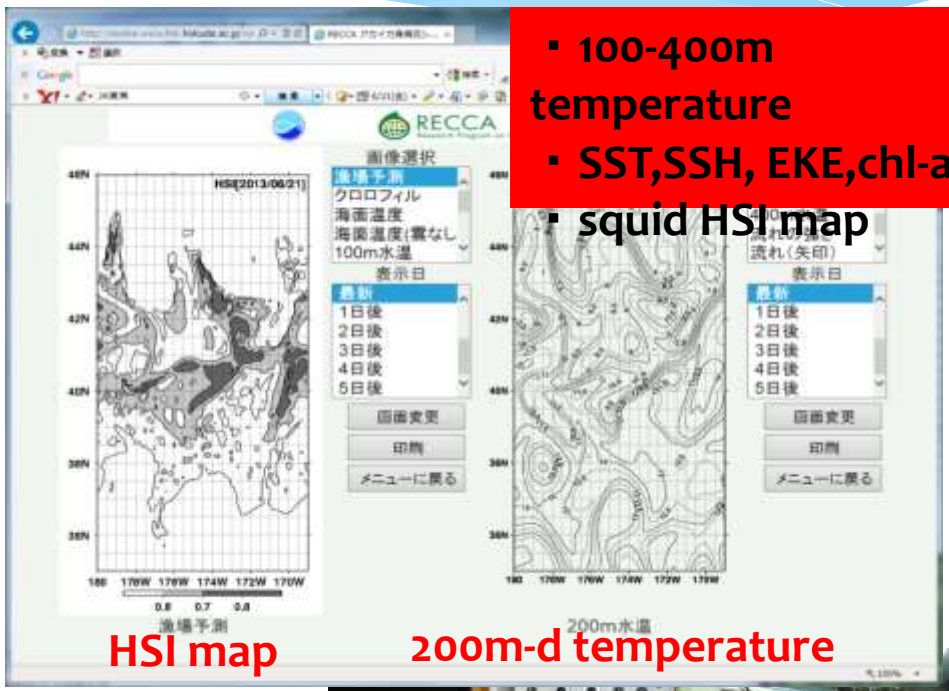
web site

HSI mapping

JAMSTEC OPeNDAP server

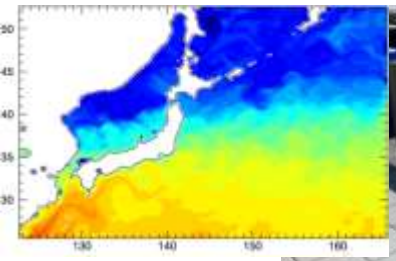
real-time ocean state prediction

- 100-400m temperature
- SST,SSH, EKE,chl-a
- squid HSI map



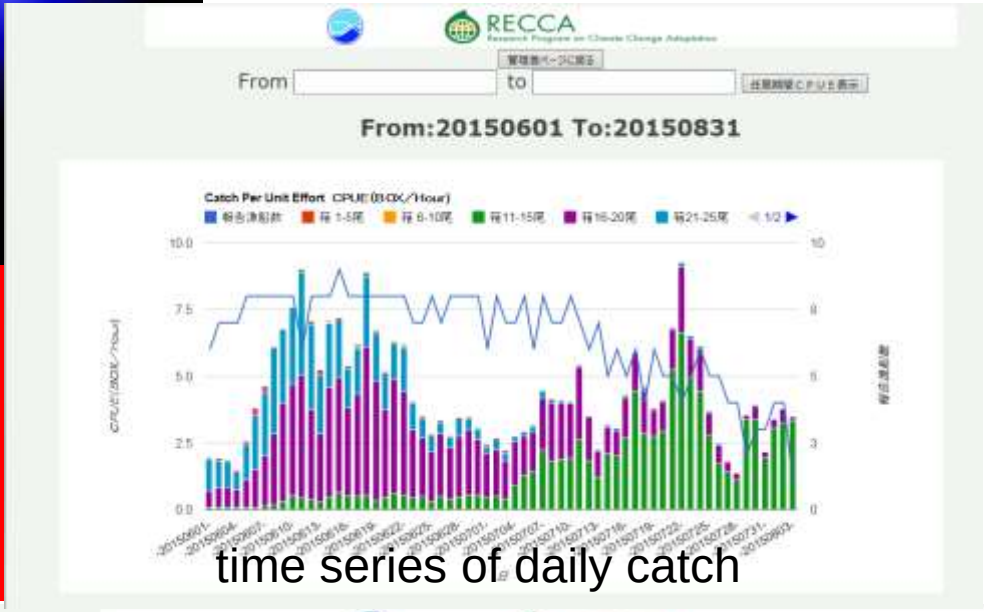
HSI map

200m-d temperature



Earth Simulator

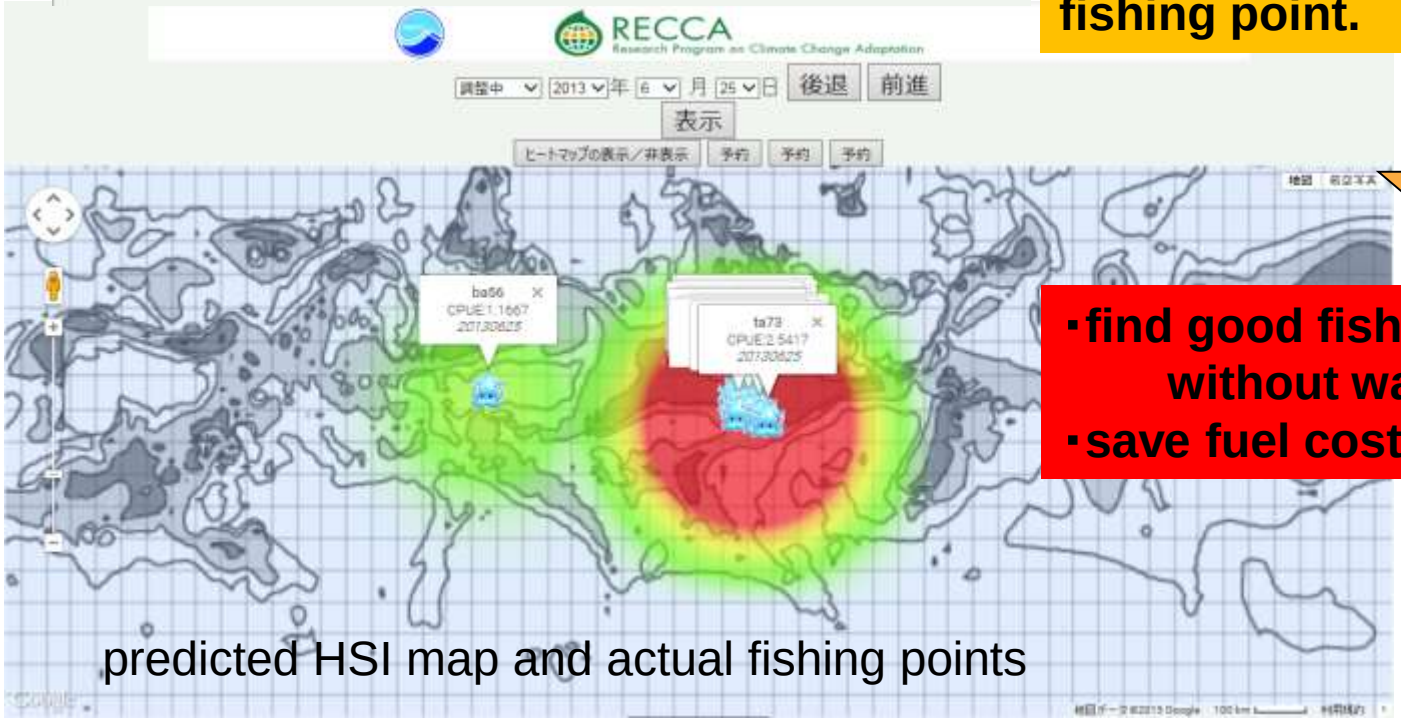
real-time monitoring



time series of daily catch

Squid researchers on land can monitor the **real-time feedback** data of daily catch and fishing point of each vessel reported from fishermen using the web site.

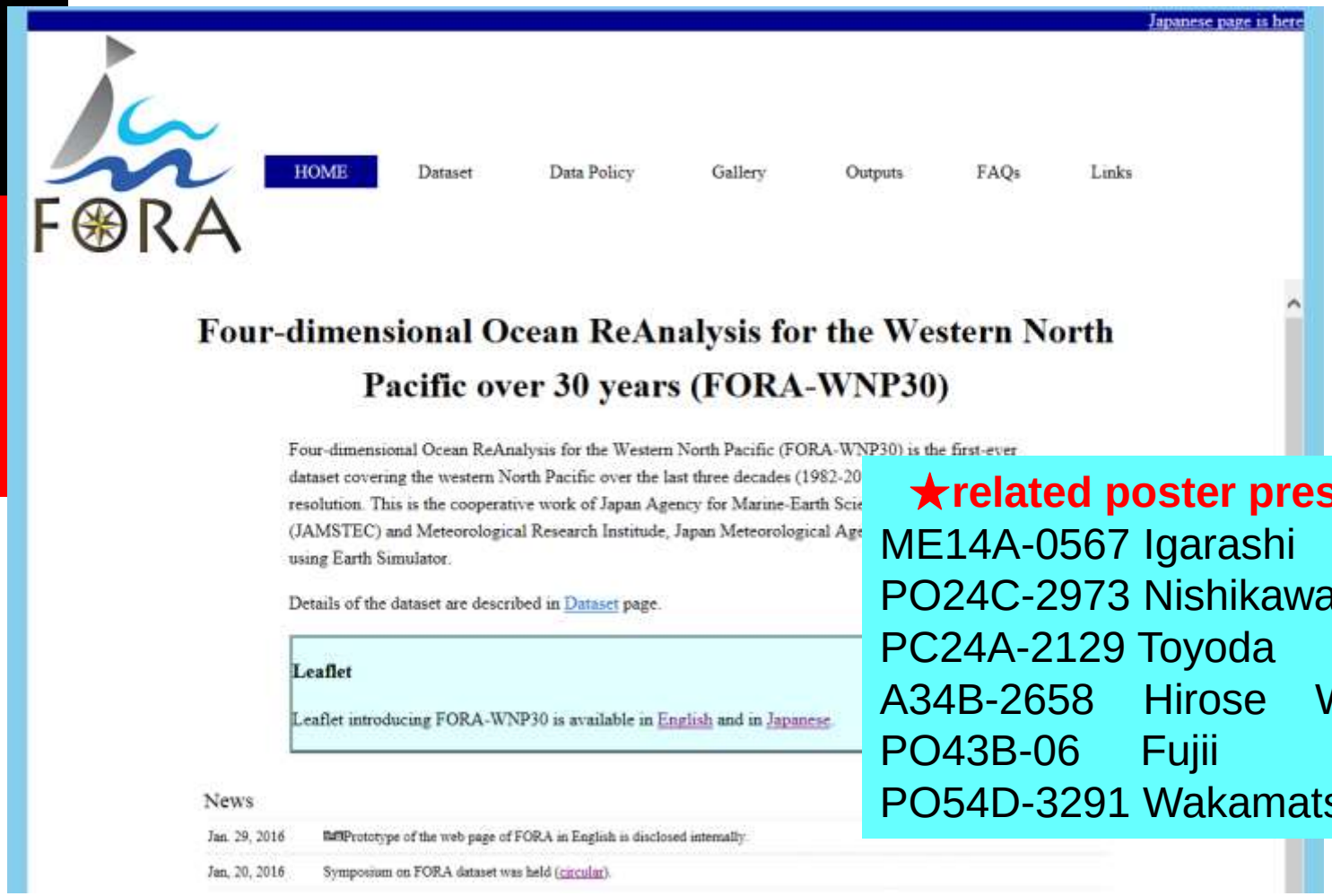
Two-way communication between fishermen and researchers effectively works for searching next fishing point.



predicted HSI map and actual fishing points

- **find good fishing points quickly without wasteful movement**
- **save fuel costs**

FORA is now available!



★related poster presentation

ME14A-0567	Igarashi	Monday
PO24C-2973	Nishikawa	Tuesday
PC24A-2129	Toyoda	Tuesday
A34B-2658	Hirose	Wednesday
PO43B-06	Fujii	Thursday
PO54D-3291	Wakamatsu	Friday

http://synthesis.jamstec.go.jp/FORA/e