

Dissemination of Ocean Literacy in CSK-2 Region Linking Research and Education

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2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

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Ocean Literacy, Kuroshio Literacy

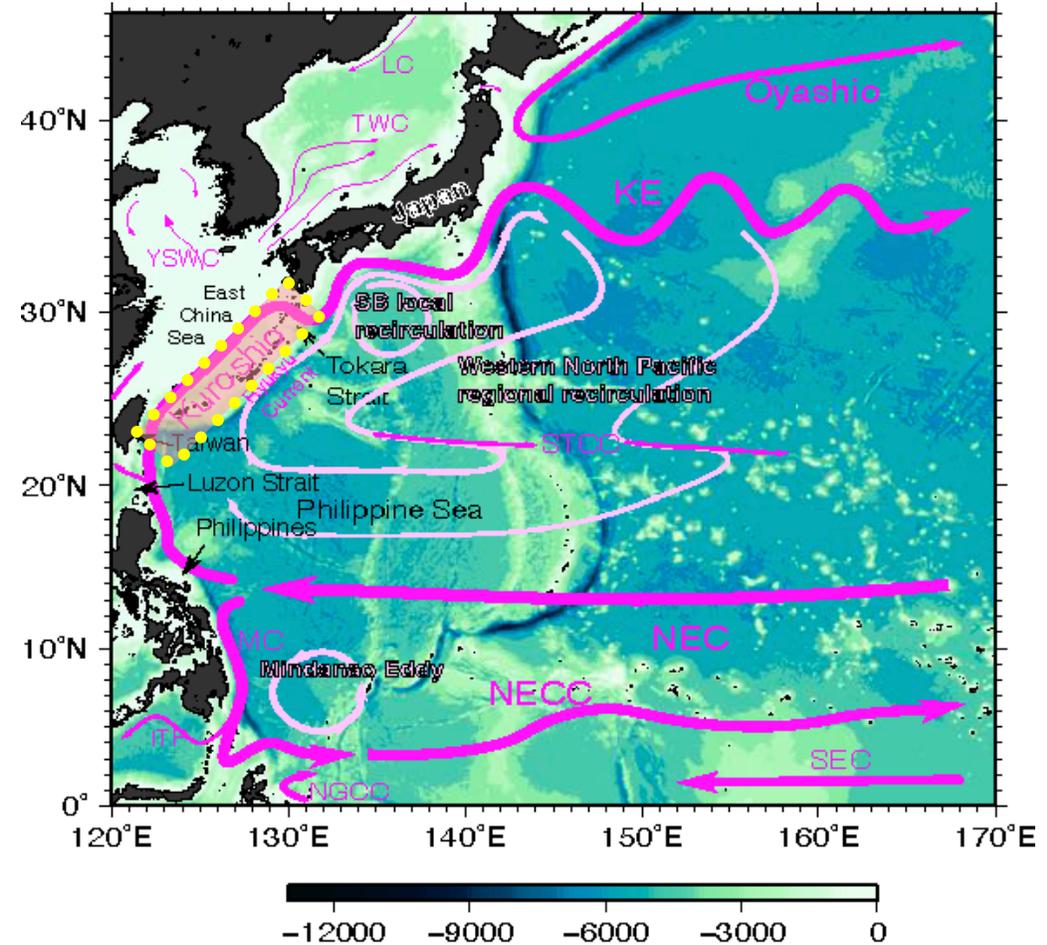
Ocean Literacy: an understanding of the ocean's influence on us and our influence on the ocean.

(*Ocean Literacy*, NMEA, US)
(*Ocean Literacy for All*, IOC-UNESCO)

Kuroshio Literacy: gaining an understanding of what the Kuroshio is, how it behaves, and how it interacts with other bodies of water in terms of physical, chemical, biological, cultural, economic, and societal perspectives.

It also highlights the importance of the mutual interaction between the Kuroshio and associated systems in our daily lives.

(WESTPAC project proposal)



Ocean / Kuroshio Literate People

Ocean-literate people:
able to understand fundamental ocean concepts and principles, can communicate about ocean issues, and can make informed and responsible decisions that lead to appropriate actions regarding the ocean and its resources.

Ocean literacy is **not just knowledge** about the state of the ocean but a **deeper understanding** of our individual and collective responsibilities **to take care of the ocean**.

Kuroshio-literate people:
able to understand the importance of the mutual interaction between the Kuroshio and associated systems in our daily lives.

Kuroshio literacy requires basic understanding of marine science concepts, as well as knowledge regarding the interaction of the ocean with the atmosphere.

(WESTPAC project proposal)

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Why Kuroshio Literacy is needed ?

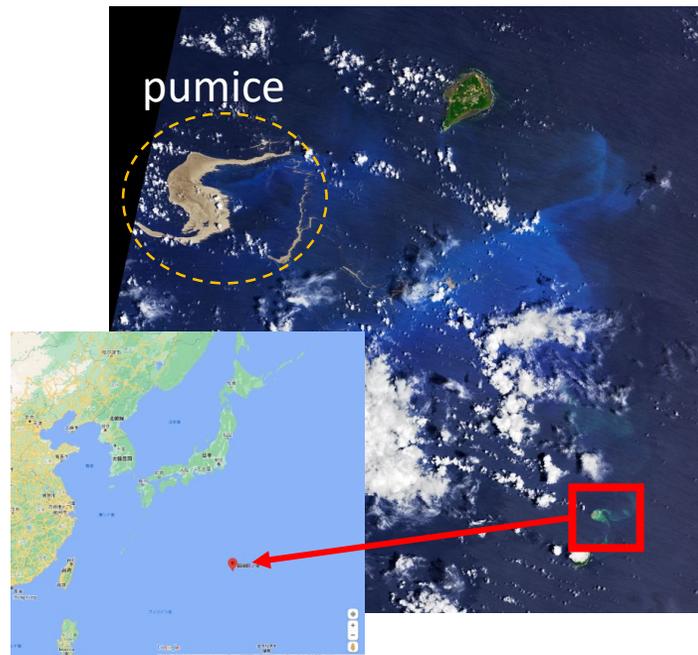
Scientific tools (such as model simulation, satellite images) help people understand the process of disaster occurrence and plan disaster prevention measures.

... but **less understanding of marine science of Kuroshio**

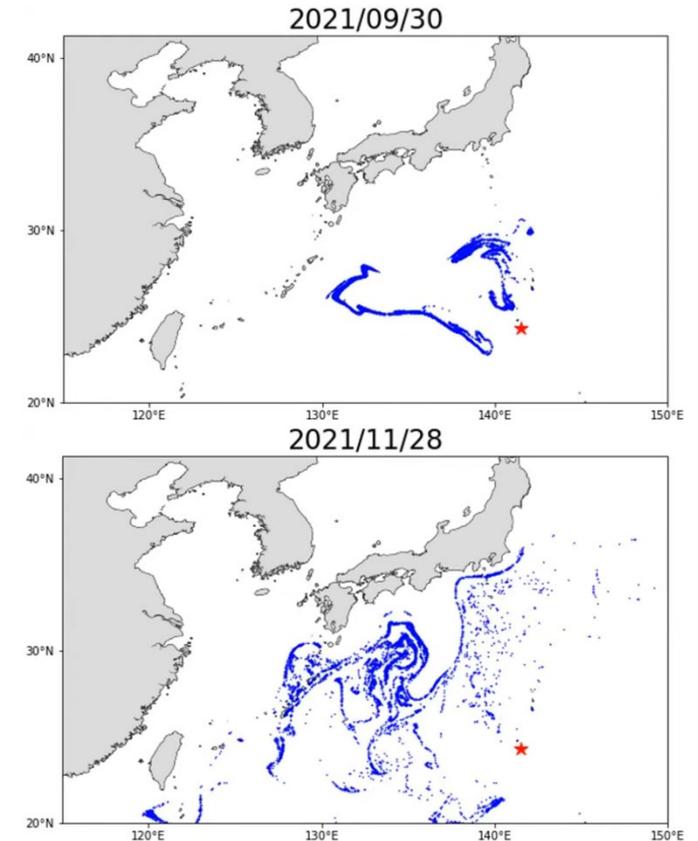
- Kuroshio counter current (recirculation)
- large meander
- subtropical gyre etc.

familiar to scientists, but not well known to citizens

Fukutoku-okanoba volcano
August 17, 2021



<https://earthobservatory.nasa.gov/images/148750/fukutoku-okanoba-explodes>



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http://www.jamstec.go.jp/j/jamstec_news/20211028/

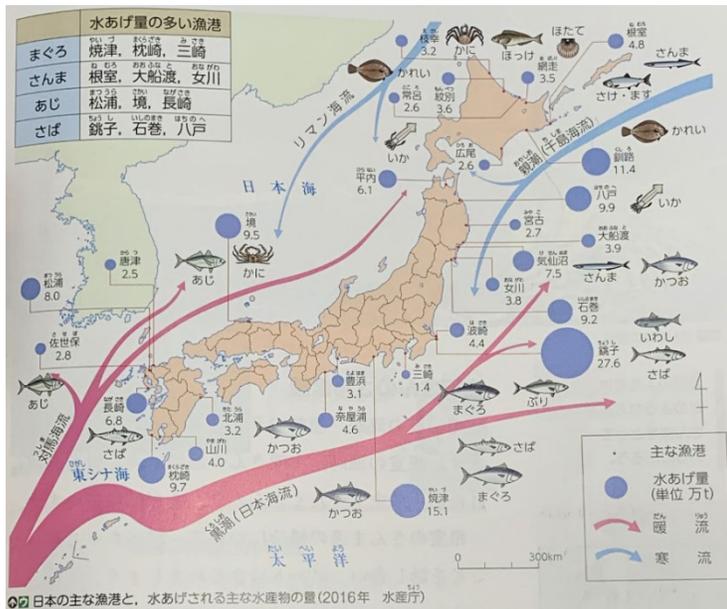
e.g. Knowledge for Kuroshio at Japanese school

simplified knowledge at formal education

- less description about source region and current field of Kuroshio and adjacent currents

[Social Studies] Atlas ©Teikoku Shoin

(elementary school)



current field around Japan

(junior high school)



ocean currents in the North Pacific

[Science] @8th grade:

air-sea interaction is learned as a part of meteorology

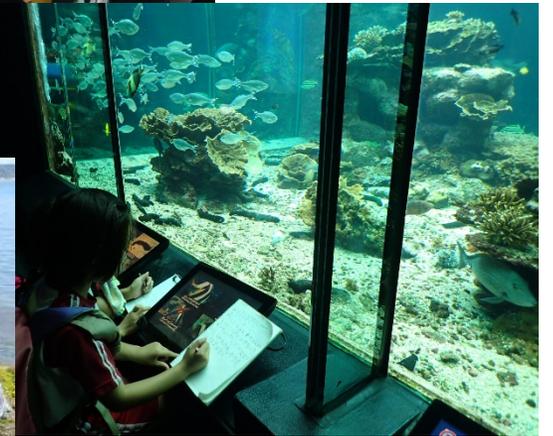
Most Japanese learn about the ocean only in school and only know it from textbooks.

Knowledge gap between research and education may be quite far.

How do we disseminate Kuroshio Literacy ?

dissemination:

- distributing online contents
open online classes, virtual exhibits/museums,
audio-visual presentations, social media, etc.
- distributing learning materials
(printings, experiment kits, etc.)
- hands-on activities



How do we disseminate Kuroshio Literacy ?

But **before** dissemination, we have to discuss:

(shortly, Kuroshio Interaction)

- what is “the importance of the mutual interaction between the Kuroshio and associated systems” ?

(explain in an easy-to-understand way)

- how do we interpret expert's knowledge for Kuroshio to students and citizens ?

What is “importance” of Kuroshio ?

“think globally, act locally”



Local

marine litter,
resource management,
eutrophication, ...

acidification,
ecosystem conservation,
global warming

Global, basin-wide



©NASA

[https://images.nasa.gov/
details-PIA00123](https://images.nasa.gov/details-PIA00123)

Learning from both local and global vision may gives people the opportunity to respect the ocean.

What is “importance” of Kuroshio Interaction ?

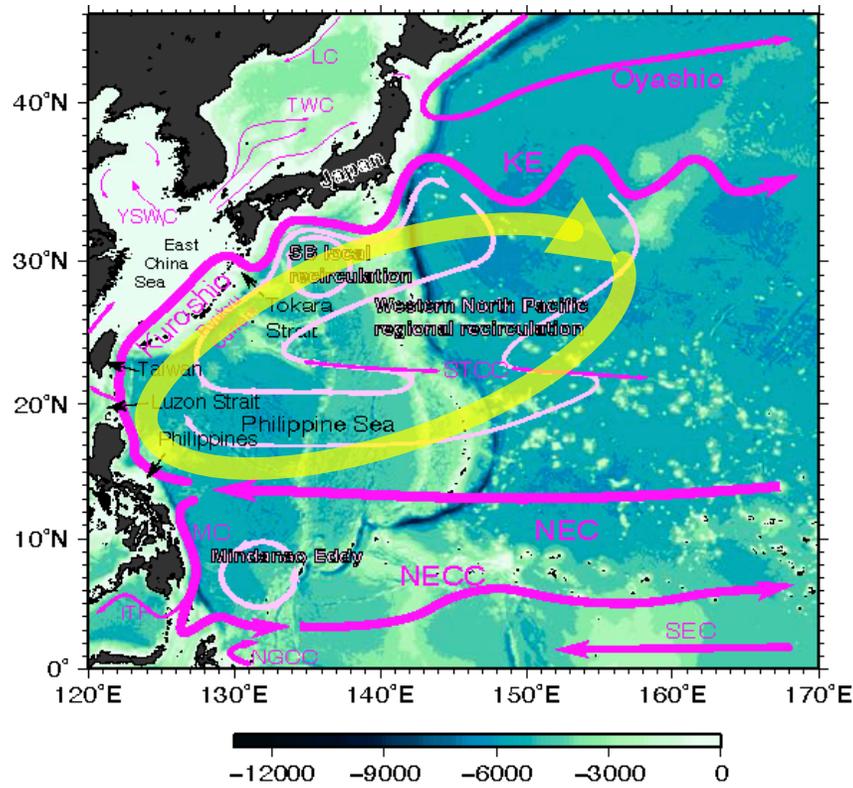
“think Kuroshio, act locally”

the mutual interaction between the Kuroshio and associated systems (Kuroshio Interaction) is related to ...

fisheries, ecological services, weather, typhoon, storm surge, drifting marine litter, pumice, etc.

directly affect people's life

combine the findings of each sea area, and share as Kuroshio Literacy



What is “importance” of Kuroshio Interaction ?

“think Kuroshio, act locally”

To disseminate the findings of CSK-2 research as Kuroshio Literacy, it is necessary to share not only among science communities, but also with citizens and children.

findings from
CSK-2 **research**



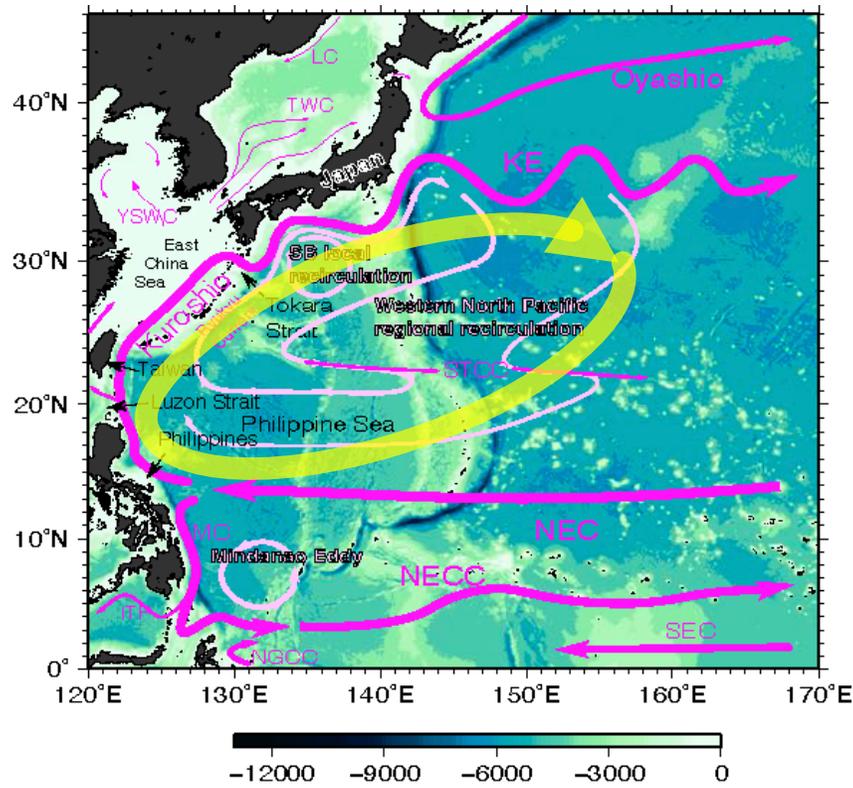
simplified knowledge
at formal **education**

e.g. science communicator

- sort scientific knowledge
- explain an easy-to-understand way
for the citizens and children

interpret

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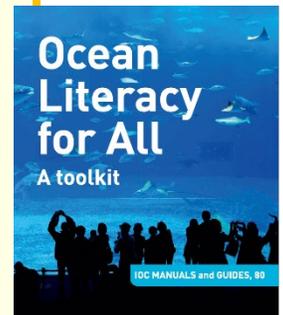
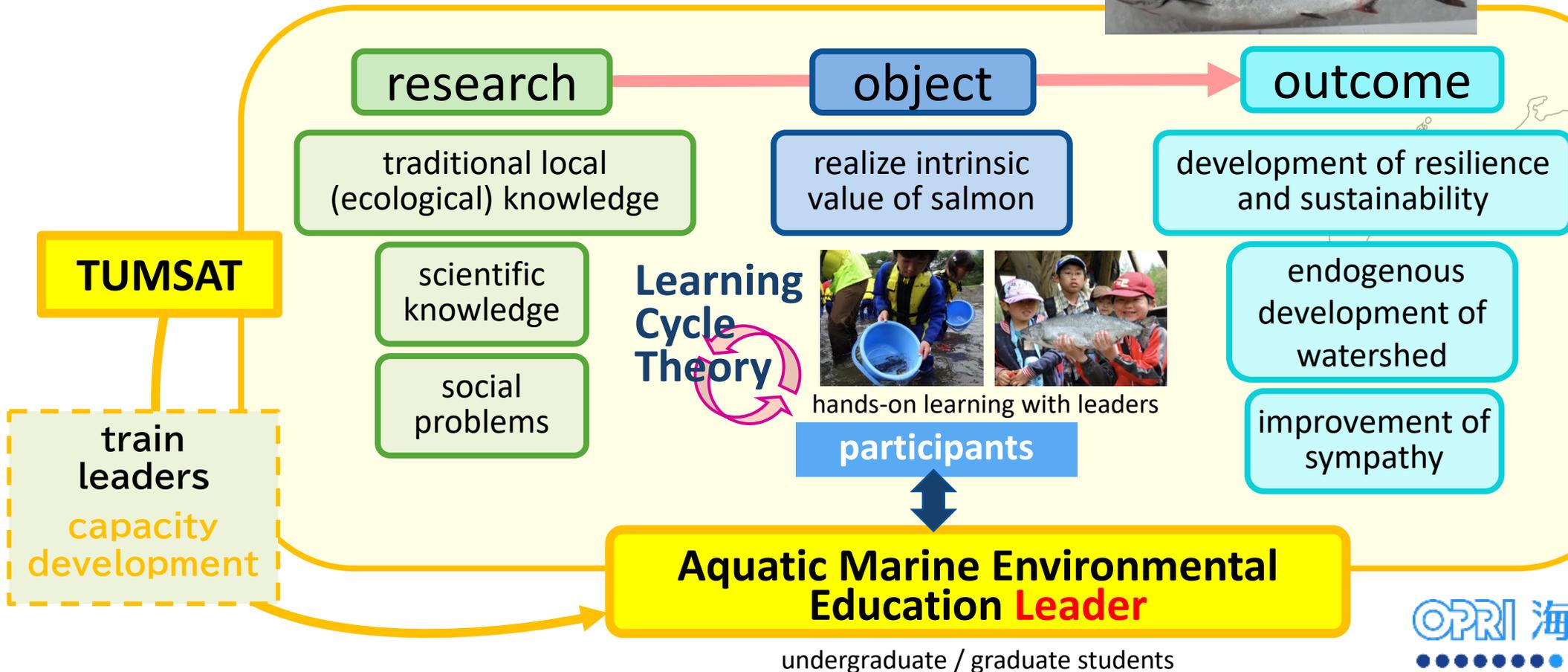
How do we “interpret” Kuroshio Literacy ?

e.g. Hei River Cherry Salmon MANABI Project (HMP)
by the Tokyo University of Marine Science and Technology (TUMSAT)

Cherry Salmon *Oncorhynchus masou*

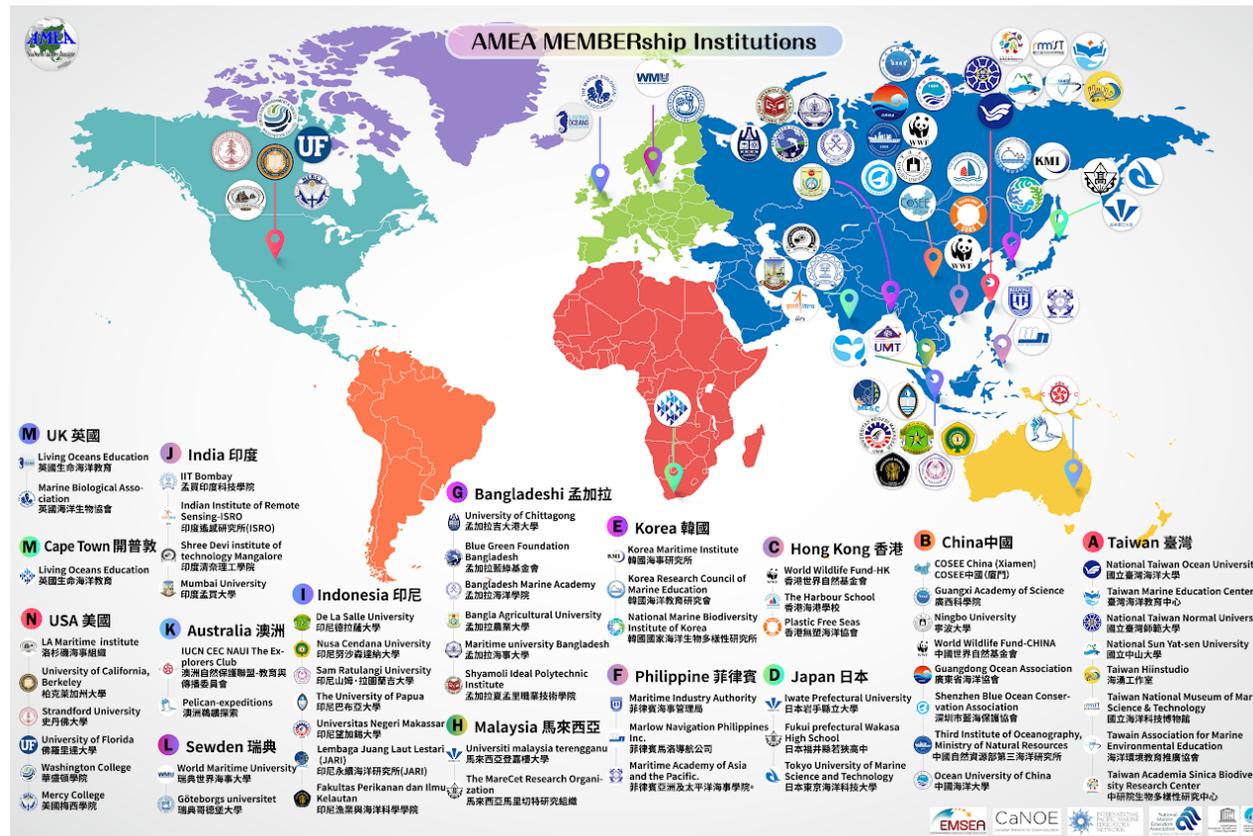


Hei River,
Iwate Pref.



How do we “interpret” Kuroshio Literacy ?

Asia Marine Educators Association (AMEA)



- since 2015

- to promote Ocean Literacy and to prepare the Asian people ocean literate, an association of Marine Educators working in Asian countries is going to be formed.

“Asia needs special resources tailored to its particular characteristics.”

AMEA website
<https://sites.google.com/view/asia-marine-ed/home>

Dissemination of findings obtained by CSK-2 as Kuroshio Literacy

To encourage more people to be ‘Kuroshio-literate people’ ...

- sort the scientific **knowledge**
select and interpret them to link scientists and citizens
- train **communicators / leaders** (capacity development)
e.g. Hei River Cherry Salmon MANABI Project (HMP)

and then ...

- provide **learning materials** for primary and secondary school
- use **virtual technologies** to make materials equally accessible to all

finally ...

- co-design and co-working with all the people

Thank you very much for your attention !

OPRI official

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Prof. Tsuyoshi Sasaki's official

 <http://www2.kaiyodai.ac.jp/~t-sasaki/>

 <https://ja-jp.facebook.com/pg/jameeatk/posts/>